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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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July 5, 1996

Randy Gainer, Environmental Manager
Genwal Resources, Inc.
P. O. Box 1420
Huntington, Utah 84528

Re: Technical Analysis, Proposal to Culvert Crandall Creek, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #3, Emery County, Utah

Dear Mr. Gainer:

The Division has completed a Technical Analysis (TA) of the Crandall Creek Culvert Application Package and you will find it enclosed for your information and files. The purpose of this TA is to determine the Technical Adequacy of your application. As you will note, there are a few areas of deficiency in your application that prevent us from approving it. Please review the TA carefully to make sure you understand the concerns. The deficiencies will need to be adequately addressed before your application can be approved. In order for us to further process your application, please provide a response by no later than September 5, 1996.

Please call if you have any questions.

Sincerely,

Daron R. Haddock
Permit Supervisor

Enclosure
cc: P. Baker
P. Grubaugh-Littig
M. Suflita
J. Kelley
R. Davidson
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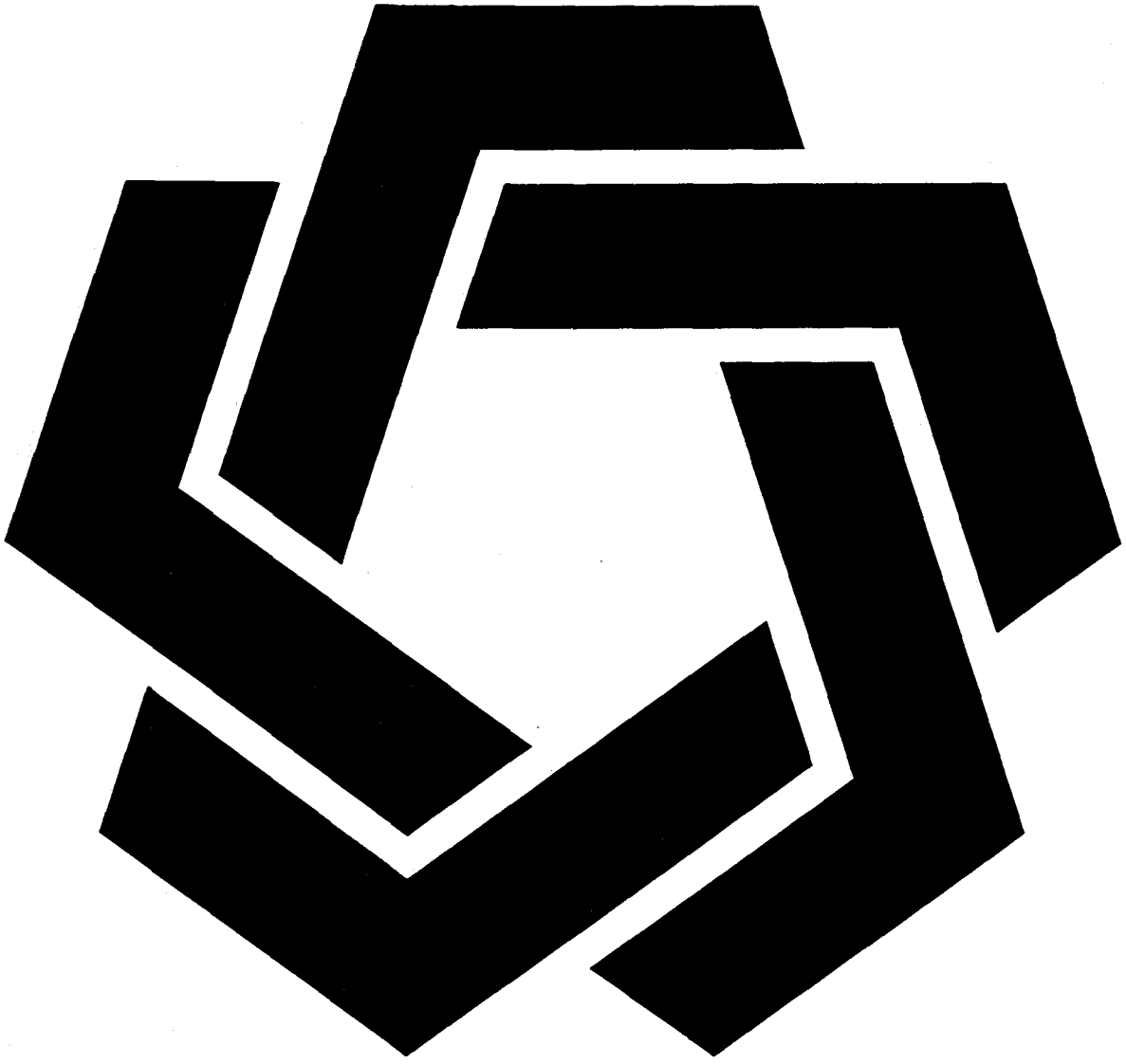
State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program



TECHNICAL ANALYSIS

GENWAL RESOURCES, INC.
CRANDALL CANYON MINE
ACT/015/032

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INTRODUCTION

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action..

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

SUMMARY OF OUTSTANDING DEFICIENCIES

GENWAL CULVERT INSTALLATION AND FACILITIES PAD ENLARGEMENT

GENWAL RESOURCES, INC. CRANDALL CANYON MINE ACT/015/032

JUNE 1996

SUMMARY OF OUTSTANDING DEFICIENCIES

R645-301-114.100

The applicant must revise the plan to include a description of the permit area as it is at present (1996).

R645-301-121.100

In Section 3.41.21, the application references a 6.65 acre disturbed area. This is probably a relic of the plan before the current application, but it needs to be corrected.

R645-301-121.100

Plate 3-1A should be updated with the most recent raptor (eagle) nesting information.

R645-301-121.100

In accordance with comments from the Forest Service and the Division of Wildlife Resources, Genwal needs to change the wording in the last paragraph in Section 3.22.1. The most recent information is that Crandall Creek is important as a spawning area and that the fish can usually get past beaver dams.

R645-301-121.100

The application lists five sensitive species potentially present in the mine's area of influence. Spotted bats, three-toed woodpeckers, and Colorado cutthroat trout should be included in the list, and Bonneville cutthroat trout and spotted frog should be deleted. Also, the statement that bald eagles only winter in Utah should be modified; there are at least three bald eagle nesting sites in the state.

R645-301-121.200

The application needs to clarify how the list of 13 threatened and endangered species was obtained. If the list is for Emery County, this should be specified.

R645-301-121.200

The text of the application should reference Appendix 3-2 for vegetation information for the riparian area.

R645-301-130, R645-301-222, R645-301-223, R645-301-224

All technical data submitted must be accompanied by the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. Technical analyses will be planned by or under the direction of a professional qualified in the subject to be analyzed. The application must include an organized, clear and concise description of the premining soils' resource, including a map delineating the different soils, soil identification, soil description, and productivity of existing soils. The Order-I Soil Survey will meet the standards of the National Cooperative Soil Survey as incorporated by reference in R645-302-314.100. Finally, if the application proposes to use selected overburden material as supplement or substitute topsoil, the application must include results of analyses as required under R645-301-233.

R645-301-232, R645-301-234

All topsoil will be removed as a separate layer from the area to be disturbed, and segregated and stockpiled. Evaluation of compliance with this regulation requires that the deficiency listed under **SOILS RESOURCE INFORMATION** be corrected. This deficiency is repeated here: *The application must include an organized, clear and concise description of the premining soils resource, including a map delineating the different soils, soil identification and description and present and potential productivity of existing soils. The Order-1 Soil Survey will meet the standards of the National Cooperative Soil Survey as incorporated by reference in R645-302-314.100.*

R645-301-242, R645-301-243, R645-301-244

More detail in the plan regarding the soil salvage (as requested in deficiencies listed under Operations Topsoil and Subsoil) is required. The Division shall not approve the 6" cover over the entire reclamation site since during reclamation, pockets of deep mollisol-like soils could be created which would provide islands of lush vegetation. Slopes where soils will not be salvaged should be identified. Acreage to be reclaimed should be reviewed for accuracy. Stabilization practices should

include mulching and stabilization efforts immediately after topsoiling. Stream channel reclamation and soil restoration methods need to be identified for soil redistribution, amendments, and stabilization.

R645-301-321.100

Most of the proposed disturbed area is in a spruce/fir/aspen community. The application does not include adequate baseline vegetation information for a revegetation success standard for this community. Options include establishing and sampling a reference area or providing adequate baseline information.

R645-301-321.100

Since the baseline information method would be used as a revegetation success standard for riparian areas, vegetation sampling in these areas needs to meet minimum sample size requirements established in the "Vegetation Information Guidelines." Thirty-one samples were taken in the riparian area, but the application does not show whether this is an adequate sample. The Division needs a complete set of raw data so the statistical adequacy of the sampling can be verified. This information is expected to also be needed when making comparisons for final bond release.

R645-301-321.100

The application needs to contain woody plant density information for the riparian area.

R645-301-321.200

The application needs to contain vegetation productivity information for the areas proposed to be disturbed.

R645-301-322

Black swifts and Williamson's sapsuckers should be added to the list of migratory birds of high federal interest that could occur in the permit area.

R645-301-333

Because Crandall Creek is an important spawning area for fish from Huntington Creek, and because the riparian habitat is considered of critical value for wildlife, Genwal needs to propose methods to mitigate for the loss of fish and riparian habitat caused by culverting a portion of Crandall Creek. Genwal needs to coordinate its plan with Wildlife Resources, the Division, the Forest Service, and possibly with the Army Corps of Engineers.

R645-301-341.210

Genwal needs to modify its seeding/planting mixtures. Conifers should be eliminated from the transplant mixture. The number of willows and other woody plants to be planted along the stream needs to be increased. Dogwoods and Wood's roses should be included in the planting mixture. The Division and Wildlife Resources recommend that certain species be added to the seed mixture, particularly for the riparian area. These species include, Kentucky bluegrass, Rocky Mountain penstemon, redtop, yarrow, and mountain big sage.

R645-301-341.250

After the Division receives woody plant density information for the riparian area, the Division of Wildlife Resources will be consulted to determine a woody plant density success standard. This standard will need to be included in the application.

R645-301-341.250

The application needs to include a method for demonstrating that the vegetative cover is capable of stabilizing the soil surface from erosion.

R645-301-341.250

The vegetative cover standard for success for areas previously disturbed by mining that were redisturbed needs to be established in the application as 50.3%.

R645-301-341.250

Genwal needs to propose a standard for measuring revegetation success in spruce/fir/aspen areas.

R645-301-341.250

The application does not contain adequate information to use the baseline information method for judging revegetation success in riparian areas as proposed in the application. The application would need to show the minimum sample size criteria were met, and it would need to have baseline productivity information.

R645-301-411.100

The application needs to contain a map which shows existing land uses of all land which will

be affected by coal mining and reclamation operations.

R645-301-520

The requirements of R645-301-520 have not been met. The requirement of para. 521.142 is that "maps and/or cross sections will clearly indicate ...the location and extent of areas in which...measures will be taken to prevent, control, or minimize subsidence and subsidence-related damage." Paragraph 525.100 requires "a subsidence control plan which will contain....a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence.... including, but not limited to: leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place."

R645-301-521

The permittee must update the surface facilities description in the operation portion of the plan to include the changes made during the 1996 surface facilities expansion.

R645-301-521

The permittee must revise the transportation facilities description in the operation portion of the plan to include the changes made during the 1996 surface facilities expansion.

R645-301-542.800

The permittee must correct the many problems in the reclamation cost estimate so that it is complete, consistent, and verifiable.

R645-301-553, R645-301-553.130

The permittee must include in the plan an adequate backfilling and grading plan. This plan must include a comprehensive narrative of the backfilling and grading process. It must include a mass balance table to establish the distribution of cut and fill and topsoil volumes across the site and must demonstrate the disposition of the 78,546 cubic yards of fill material which will be hauled in for the construction of the facilities pad. It must also include a stability analysis of the final slopes to demonstrate that they will achieve a stability safety factor of at least 1.3.

R645-301-553.100

The permittee must eliminate from the plan all inconsistencies and ambiguities regarding the restoration of the site to its approximate original contour. The plan must show that the site will be restored to its approximate original contour and that all highwalls and cut slopes will be completely

eliminated.

R645-301-631, R645-301-748

The permittee must include in the plan a complete description of the methods used to backfill and seal all boreholes to the surface.

R645-301-720

The requirements of R645-301-720 have not been met. The text and plates are not consistent with regard to the sedimentation pond emergency spillway discharge.

R645-301-720

The requirements of R645-301-720 have not been met. Particularly paragraph 722 which requires "... maps to adequately represent the existing land surface configuration of proposed disturbed areas ..... and the proposed permit area...".

R645-301-731.220

The current surface-water monitoring plan does not meet the requirements of R645-301-731.220. In particular, para. 731.221 which requires "The plan will provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in R645-301-731 as well as the effluent limitations found in R645-301-751." When preparing the plan, paragraphs 731 and 751 should be followed for specific requirements on earth-handling to meet these requirements. Additionally, R645-301-526.222 contains requirements relative to minimizing damage to fish and to minimizing suspended solids. These requirements should be included to the surface-water monitoring plan. The surface-water monitoring plan must include continuous monitoring of turbidity and detailed measures to prevent the construction from causing sediment in the stream.

R645-301-731.510, R645-301-731.520, R645-301-751, R645-301-731.600

The plan must be made to address the requirements of these regulations.

R645-301-731.600

The requirements of R645-301-731.600 have not been met. In particular, para. 731.611 "Coal mining and reclamation operations will not .... adversely affect the water quantity and quality or other environmental resources of the stream."

R645-301-732.200

The requirements of R645-301-732.200 have not been met. Although the basic design of the sedimentation pond is presented, the several significant inconsistencies between plates and text make it impossible to tell if it is done correctly and completely.

R645-301-732.300, R645-301-742.300

The requirements of R645-301-732.300 and 742.300 have not been met. In particular, para 742.100 which requires, "Minimize erosion to the extent possible", "Diverting runoff away from disturbed areas.", and "Diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion."

R645-301-742.221.37

The requirements of R645-301-742.221.37 have not been met. It will be necessary to continue the quarterly piezometer measurements and weekly visual monitoring under the new plan as has been done under the old plan.

R645-301-742.312

The requirements of R645-301-742.312 have also not been met. "The diversion and its appurtenant structures will be designed, located, constructed maintained, and used to: Be stable." The attachment of gabions to each other are is not adequate as presented in the plan.

R645-301-742.313

The plan does not meet the requirements of R645-301-742.313. Specifically, " A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion will be designed and constructed so as to restore or approximate the premining characteristics of the original stream channel including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat."

Also see R645-301-740, especially 742.120, for further requirements on reclamation of sedimentation ponds.

R645-301-744

The requirements of R645-301-744 have not been met. The discharge from the culvert into the energy dissipator, as the plan describes, will not perform to "reduce erosion to prevent deepening or enlargement of stream channels...".

R645-301-763

The plan does not meet the requirements of R645-301-763. There is no description to explain how the "siltation structures will be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated".

LEGAL AND ADMINISTRATIVE INFORMATION

LEGAL AND ADMINISTRATIVE INFORMATION

IDENTIFICATION OF INTERESTS, VIOLATION INFORMATION, AND RIGHT OF ENTRY INFORMATION

Regulatory Reference: UCA R645-301-112; R645-301-113; R645-301-114

Analysis:

Identification of Interests

The applicant and operator are both Genwal Resources, Inc., a corporation incorporated under the laws of Utah. Randolph B. Gainer is identified as the resident agent. The Intermountain Power Agency (IPA) and Andalex Resources, Inc., will pay the abandoned mine reclamation fee. The application contains Genwal's employer identification number, address, and telephone number.

IPA and Andalex Resources, Inc., jointly own Genwal Resources, Inc. The application contains employer identification numbers and lists of officers and directors with dates they assumed their positions for all three of these entities. Andalex Resources, Inc., is 100% owned and controlled by Andalex Resources, B. V. This company is owned and controlled by, in ascending order, Andalex Resources, S. A., Andalex Holdings, Ltd., and the Andrew Trust. Appendix 1-9, Section A, shows the officers and directors of the companies that own and control Andalex Resources, Inc. Andalex Resources, B. V., Andalex Resources, S. A., Andalex Holdings, Ltd., and the Andrew Trust do not have employer identification numbers.

IPA is currently engaged in the reclamation of the Horse Canyon Mine in Emery County. A list of current and previous mining permits held by Andalex and its affiliates is included in Appendix 1-9, Appendix B. The Crandall Canyon Mine is the only coal mining and reclamation operation owned or controlled by Genwal Resources.

The legal owners of the area affected by surface operations and facilities are the United States and Genwal Resources, Inc. The U. S. Forest Service, the State of Utah, and Genwal Resources, Inc., are surface and coal owners within the permit area. Owners of surface and mineral property contiguous to the permit area are the United States and Genwal.

Violation Information

The application says neither the applicant nor any subsidiary, affiliate, or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years. They have not forfeited a mining bond or similar security deposited in lieu of bond. There are no unabated cessation orders or air and water quality violation notices received prior to the date of the application by any coal mining and reclamation operation

owned or controlled by Genwal or by any person who owns or controls Genwal.

Right of Entry Information

The application says the applicant bases its legal right to enter and begin operations in the permit area on:

Federal coal lease U-54762 issued to Genwal Coal Co. December 1, 1986, and currently owned by Andalex and IPA.

Assignment of federal leases SL-062648 and SL-050655 from the heirs of John Sanders on July 11, 1991.

Assignment of federal coal lease UTU-68082 to the joint owners (NEICO and IPA) in March 1994.

Assignment of Utah State coal lease ML-21568 to the joint owners (NEICO and IPA) 3 July 11, 1991.

Assignment of Utah State coal lease ML-21569 to the joint owners (NEICO and IPA) July 11, 1991.

In addition to the leases, the Forest Service has issued four special use permits. These are for the Crandall Canyon road, the topsoil stockpiles, the sediment pond, and some surface facilities near the portals.

One of the special use permits is for an area of 0.10 acres for "snow storage and summer parking." The legal description is Township 16 South, Range 7 East, Section 6, SW ¼ NE ¼. This legal description appears to be in error. All of the disturbed and proposed disturbed areas are completely within Section 5. It appears this special use permit is for the Forest Service turnaround area. This is at least one-eighth mile from the nearest part of land described in the legal description. The application can be considered complete and accurate, but the Forest Service should correct the legal description in its permit.

The application includes a map showing lease boundaries and another showing topsoil storage locations. There is also a map showing the permit area.

Findings:

The plan fulfills the requirements of this section.

UNSUITABILITY CLAIMS

Regulatory Reference: UCA R645-301-115

Analysis:

Available information does not show the area to be within an area designated as unsuitable for coal mining and reclamation activities. Operations are being conducted within 100 feet of a public road, and the application contains a copy of the Forest Service special use permit for the road.

There are no occupied dwellings within 300 feet of the permit area.

Findings:

This section of the application is complete and accurate.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, FACILITIES OR STRUCTURES USED IN COMMON, FILING FEE, NOTARIZED SIGNATURE

Regulatory Reference: UCA R645-301-116; R645-301-117; R645-301-118; R645-301-123

Analysis:

The permit was issued May 13, 1993, for a period of five years.

A certificate of liability insurance is in Appendix 1-10. Insurance coverage is afforded by the Federal Insurance Company, and the producer is the Price Insurance Agency. The policy number is 3710-39-89. The general aggregate limit is $2,000,000, and the limit for each occurrence is $1,000,000. The policy includes XCU coverage. There is a $1000 deductible for property damage. The State of Utah is named as the certificate holder. The certificate shows the mine name and number, and the cancellation clause has been changed in accordance with Division requirements.

Because this is a significant revision, Genwal will need to submit a proof of publication for advertisements in a local newspaper of general circulation in the locality of the mine.

The application includes a statement signed by Jay Marshall on March 6, 1995, that the information in the application is true and correct to the best of his information and belief. The statement says Mr. Marshall is the resident agent, and the information in the application is true and correct to the best of his information and belief. Randolph B. Gainer is the current resident agent,

and the revision was accompanied by a signed and notarized statement from him that the information in the application is true and correct to the best of his information and belief. Although Genwal has submitted information required by the regulations, it is suggested that Mr. Marshall's statement be replaced by a current one from Mr. Gainer.

Findings:

This portion of the application is complete and accurate.

ENVIRONMENTAL RESOURCE INFORMATION

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

Analysis:

The appendices of Chapter 1 contain legal descriptions of the various leases, right-of-ways, and special use permits. Plate 1-1--Lease Map shows the boundaries of the various leases. Plate 5-2--Mining Projections shows the permit area boundary. However, the plan does not contain a description of the permit area *per se*.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-114.100

The applicant must revise the plan to include a description of the permit area as it is at present (1996).

HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-411.140

Analysis:

The cultural resources surveys revealed one site located near the junction of the Forest Service and Huntington Canyon roads that probably meets the criteria for inclusion in the National Register of Historic Places. The area is outside of Genwal's permit area, and it has been fenced. Within the permit area, there are no public parks, cemeteries, or lands within the National System of Trails or the Wild and Scenic Rivers System.

The area proposed to be disturbed by culverting Crandall Creek was also surveyed for cultural resources, but none were found. Based on this, the Division should recommend that the State Historic Preservation Officer give a clearance for the project to proceed.

Findings:

This section of the application is complete and accurate.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-321

Analysis:

Crandall Canyon contains ten vegetative communities. Six of these occurred in areas that have been disturbed. These communities were classified as cottonwood, sagebrush, mountain shrub/grassland, mixed mountain shrub/conifer/aspen, spruce/fir/aspen, and riparian. Also, portions of the disturbed area were previously disturbed. Appendix 3-1 contains details of the vegetation sampling.

Genwal has committed to take aerial color infrared photographs every five years beginning in 1995 to monitor the effects of underground mining on vegetation.

The reference area is in a mountain shrub/grassland community on a south-facing slope above the mine. The area proposed to be disturbed by the culvert installation is primarily in riparian and spruce/fir/aspen communities. The application does not propose a separate revegetation success standard for spruce/fir/aspen areas, but the Division requires a separate standard for each community when the area to be disturbed within that community is greater than one acre. More than one acre of spruce/fir/aspen would be disturbed with the culvert installation proposal.

The current plan contains some data about the spruce/fir/aspen community, but the information is inadequate to use it as a "baseline information" revegetation success standard. Another alternative would be to establish a reference area in a spruce/fir/aspen area. These alternatives for revegetation success standards are discussed further under the regulation R645-301-340 in this review. The vegetation information needed for the application is either 1) Complete baseline vegetative cover information, *including overstory*, or 2) Reference area vegetation information that can be compared with the baseline information in the plan.

The application shows the results of sampling an area described as a bench above the riparian area. It is possible this area has a spruce/fir/aspen community, but only eleven samples were taken on the bench. The minimum number of samples that must be taken when sampling for bond release

(or for baseline information to be used for eventual bond release) using the methods discussed in the application is fifteen. If the data from this area is to be used for a revegetation success standard, it must meet the minimum sample size criteria discussed in the "Vegetation Information Guidelines," Appendix A. It would be desirable for Genwal to include complete raw data for any area where the baseline information method is to be used for a revegetation success standard.

The addendum to Appendix 3-2 indicates the baseline information will be used as a revegetation success standard for riparian areas. Thirty-one samples were taken in the riparian area, but the application gives no information about whether this number of samples meets minimum sample size requirements.

Neither the current plan nor the application contains woody plant density information for the riparian area. This information is needed both to design a revegetation plan and to develop revegetation success standards.

R645-301-321.200 requires the application to contain productivity information. In the addendum to Appendix 3-2, the application says productivity measurements were not made but that the SCS will be contacted at a later date to determine this value. The application needs to contain productivity information for the areas proposed to be disturbed.

The new vegetation information was included as an addendum to Appendix 3-2, but the text of the application only refers to Appendix 3-1 for vegetation information. The text needs to also reference Appendix 3-2.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-321.100

Most of the proposed disturbed area is in a spruce/fir/aspen community. The application does not include adequate baseline vegetation information for a revegetation success standard for this community. Options include establishing and sampling a reference area or providing adequate baseline information.

R645-301-321.100

Since the baseline information method would be used as a revegetation success standard for riparian areas, vegetation sampling in these areas needs to meet minimum sample size requirements established in the "Vegetation Information Guidelines." Thirty-one samples were taken in the riparian area, but the application does not show whether this is an adequate sample. The Division

needs a complete set of raw data so the statistical adequacy of the sampling can be verified. This information is expected to also be needed when making comparisons for final bond release.

R645-301-321.100

The application needs to contain woody plant density information for the riparian area.

R645-301-321.200

The application needs to contain vegetation productivity information for the areas proposed to be disturbed.

R645-301-121.200

The text of the application should reference Appendix 3-2 for vegetation information for the riparian area.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-322

Analysis:

Wildlife Information

Fish and wildlife information is presented in Section 3.22 and in Appendixes 3-2 and 3-3. The plan and application contain results from several studies, including macroinvertebrate studies done in 1980 and 1994; fish and stream investigations performed in 1982, 1983, 1994, and 1995; several raptor surveys; and a survey for all birds in the area of the proposed expansion.

The current and proposed disturbed areas contain some habitat for big game animals. Primary summer ranges are on the plateaus, and most winter range areas are at lower elevations than the mine.

Most of the permit area does not contain good cliff nesting habitat, but there are a few areas with golden eagle nests. Most recently, a pair of eagles nested in a cliff above the mine in 1995. The application says raptor nests are shown on Plate 3-1A. While this map shows two golden eagle nests, it does not show the nest that was apparently active in 1995. The map should be updated. The two eagle nests shown on the map could not be found in a 1993 survey.

Appendix 3-3 contains a 1980 report that discusses accipiters in Crandall Canyon. The

report has evidence of past nesting and hunting activity, but no birds have been found in more recent searches. However, Crandall Canyon and similar canyons in the Huntington Creek area should be considered good accipiter habitat.

Appendix 3-3 contains a list of twenty-two bird species identified by the Fish and Wildlife Service as migratory birds of high federal interest. Section 3.22.21 lists seven of these species that have the potential of migrating within the region where the mine is located. Two species should be added to the list in Section 3.22.21. Black swifts were seen during the survey done in 1980. Also, the Division of Wildlife Resources commented that Williamson's sapsuckers nest in the Huntington Canyon area.

Table 5 in Appendix 3-3 has a list of reptile and amphibian species which may be found in the area according to published information. Reptiles are found throughout the permit area, but amphibians are only associated with water. The application says baseline studies in the spring of 1994 did not encounter any threatened or endangered reptiles or amphibians. More detail of this work is in an addendum to Appendix 3-2.

The application contains 1994 studies of macroinvertebrates and fish populations in Crandall Creek. Genwal has committed to inventory macroinvertebrate populations in the creek every three years.

Appendix 3-2 and Section 3.22.1 discuss the importance of Crandall Creek as fish habitat. The application says the presence of several beaver dams precludes Crandall Creek from acting as a major nursery/spawning stream. One of the recommendations in a 1982 report from Walter Donaldson, regional fish manager for the Division of Wildlife Resources, was to occasionally blow up beaver dams as they tend to accumulate silt and deter upstream trout movement. However, April 1, 1996, correspondence from the Forest Service says beaver dams are rarely barriers to fish passage. Cutthroat trout spawn during high water periods in the spring when they can swim over the dam. In March 8, 1996, correspondence to the Division, Wildlife Resources said, for its size, Crandall Creek contains a significant population of resident fish and provides a significant spawning ground/nursery.

In accordance with these comments, Genwal needs to change the wording in the last paragraph in Section 3.22.1. The most recent information is that Crandall Creek is important as a spawning area and that the fish can usually get past beaver dams.

Threatened or Endangered Species

The application has a list of 13 threatened or endangered species that it says were identified in a February 1995 listing. It is unclear how this list was compiled. It appears the list may be for Emery County. If so, this should be specified. Of the 13 species, the application says two, the bald eagle and peregrine falcon, could potentially occur in the permit area. However, the

occurrence is most likely to be migration through the area rather than nesting or roosting. The application says bald eagles only winter in Utah. This statement should be modified; there are at least three known bald eagle nesting sites in the state. The application is correct that it is most likely that peregrine falcons would only be migrating through the area, but a pair was found recently in the Trail Canyon Mine permit area. It is unclear if these birds were nesting, perching, eating, or hunting, but it appears they were doing more than just migrating through.

The application's conclusions about threatened and endangered species within the permit area are correct. In addition to the species discussed in the application, there is also a potential to affect the threatened and endangered fish of the upper Colorado through surface water depletion. However no additional surface water losses are expected with the expansion project,

The application lists five sensitive species potentially present in the mine's area of influence. None of the species has been observed within the permit area. The Forest Service commented that spotted bats, three-toed woodpeckers, and Colorado cutthroat trout should be included in the list and that Bonneville cutthroat trout and spotted frog should be deleted.

The Environmental Assessment for the 1994 LBA revision contains a biological assessment/evaluation that discusses several endangered and sensitive species that could occur in the area. It found that there will be no effect on most of the species from leasing and mining the coal, but goshawks could be affected through loss of water sources caused by mining. There are no threatened or endangered plant species known for the area according to information from Bob Thompson of the Forest Service.

Although no threatened or endangered plant species were encountered in the vegetation survey, at least two sensitive species have been found in the general vicinity. Canyon sweetvetch (*Hedysarum occidentale* var. *canone*) is present in Huntington Canyon near the turnoff to Crandall Canyon. Intermountain bitterweed (*Hymenoxys helenioides*) has been collected in Carbon and Emery Counties in mountain brush, sagebrush, aspen, and meadow communities between 8800 and 10,700 feet elevation. The permit area probably contains suitable habitat for this species, but it is unlikely to be adversely affected..

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-121.100

Plate 3-1A should be updated with the most recent raptor (eagle) nesting information.

R645-301-322

Black swifts and Williamson's sapsuckers should be added to the list of migratory birds of high federal interest that could occur in the permit area.

R645-301-121.100

In accordance with comments from the Forest Service and the Division of Wildlife Resources, Genwal needs to change the wording in the last paragraph in Section 3.22.1. The most recent information is that Crandall Creek is important as a spawning area and that the fish can usually get past beaver dams.

R645-301-121.200

The application needs to clarify how the list of 13 threatened and endangered species was obtained. If the list is for Emery County, this should be specified.

R645-301-121.100

The application lists five sensitive species potentially present in the mine's area of influence. Spotted bats, three-toed woodpeckers, and Colorado cutthroat trout should be included in the list, and Bonneville cutthroat trout and spotted frog should be deleted. Also, the statement that bald eagles only winter in Utah should be modified; there are at least three bald eagle nesting sites in the state.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-222, -223, -233.

Analysis:

Chapter 2		Soils.
Section 2.22		Soil Survey.
	2.22.2	Soil Identification.
	2.22.3	Soil Description.
	2.22.4	Present and Potential Productivity of Existing Soils.
Section 2.23		Soil Characterization.
Section 2.24		Substitute Topsoil.

In general, Chapter 2 Soils provides incomplete new-soil resource information for the north

facing slopes of the proposed culvert expansion area.

The permit modification references earlier soils resource information contained in the current working permit. These references include both an original soil resource appendix and a subsequent soil study prepared by the U.S. Forest Service. The original reference is for the existing surface disturbances and includes a detailed soil survey, soil description, productivity data and soil characterization information for the immediate facility's area (Appendix 2-3 and Plate 2-1). As detailed, this inclusive survey only includes the south facing soils of Crandall Canyon. The subsequent reference, provides a general-area soil survey for portions of the Huntington River watershed surrounding and within the jurisdiction of Genwal's leases. Appendix 2-3A does not contain specific survey information for the immediate facility area's north facing soils, disturbed or undisturbed.

A supplemental soil investigation was recently conducted by Genwal personnel in July 1995. Laboratory testing data are contained in Appendix 2-3B for two, hand extracted soil samples from undisturbed soils within the proposed culvert expansion. Soil sample analyses presented in Appendix 2-3B indicate that good quality soil was sampled, but laboratory methods were not disclosed. Field notes are lacking, sample locations are not identified on any soil map and the samples were not adequately labeled. Therefore, the Division is unable to determine from what locations and to what depths topsoil should be salvaged.

Regulations (R645-301-222, -223, and -224) require topsoil and substitute topsoil characterization and that an Order-I Soil Survey be conducted according to the standards of the Soils Conservation Service as published in the "National Cooperative Soil Survey." The Division requests that Genwal seek prior approval of pit location and that the pits be left open for Division inspection. The Division's "Guidelines for Management of Topsoil and Overburden" request that qualified soil scientists conduct a soil survey of any location prior to disturbance. The qualifications of Genwal personnel were not disclosed (R645-301-130).

The imported fill material is not adequately identified and/or analyzed. Since the fill material will be placed directly into a riparian environment for an extended period of time, analyses should be performed for acid/toxic/hazardous forming properties (R645-301-724.500). In addition, the information presented throughout the text in Chapter 2 and Appendix 2-3B is confusing and needs clarification. Supplemental survey information repeatedly referenced, intertwines extracted information from the earlier two soil surveys with the recently collected data. Therefore, since the requisite qualifications of sampling personnel were not disclosed and there is a lack of succinct soil survey information, the Division cannot sufficiently evaluate the soil profile information provided.

Findings:

The plan does not fulfill the requirements of this section. The permittee must provide the

following, prior to approval, in accordance with the requirements of:

R645-301-130, R645-301-222, R645-301-223, R645-301-224

All technical data submitted must be accompanied by the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. Technical analyses will be planned by or under the direction of a professional qualified in the subject to be analyzed. The application must include an organized, clear and concise description of the premining soils' resource, including a map delineating the different soils, soil identification, soil description, and productivity of existing soils. The Order-I Soil Survey will meet the standards of the National Cooperative Soil Survey as incorporated by reference in R645-302-314.100. Finally, if the application proposes to use selected overburden material as supplement or substitute topsoil, the application must include results of analyses as required under R645-301-233.

LAND USE RESOURCE INFORMATION

Regulatory Reference: R645-301-411

Analysis:

The premining uses of the land were non-developed recreation, native wildlife habitats, and dispersed cattle grazing. Because of the very steep topography, grazing is very limited on the side slopes.

The application includes a map that shows grazing allotments in part of the permit area.

Emery County has zoned the area CE-1, critical environmental. This zoning designation does not preclude mining. The Manti-LaSal National Forest Land and Resource Management Plan includes the area in four different management units. These are the Leasable Minerals Area, General Big Game Winter Range, Range Forage Production, and the Riparian Management Unit.

The area was mined from 1939 to 1955. Approximately 35,000 tons of coal was removed from the Hiawatha seam by room and pillar methods.

R645-301-411.110 requires that the application include a map and supporting narrative of the uses of the land existing at the time of filing of the application. Plate 4-1 shows oil and gas leases and grazing allotments for leases SL-062648 and U-54762, but it does not show land uses for the right-of-way and the two state leases. Other maps in the plan show vegetation communities in these areas, but they do not show land uses as required by the regulation.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-411.100

The application needs to contain a map which shows existing land uses of all land which will be affected by coal mining and reclamation operations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Analysis:

The addition of the 1200 ft. culvert and the addition of 73,000 cu. yd. of fill material do constitute a significant revision to the permit. The surface area is increased from 5.55 acres to 10.0 acres, an 82% increase. There are also significant additions and revisions of machinery, equipment, and facilities used in the mining operations.

The original plan, dated 12/23/94 Revised 10/1/95, contains the baseline data that are relevant to the proposed culvert and expansion. The baseline data in the following areas have been reviewed and determined to be unchanged from the original Technical Analysis and approval:

- Sampling and Analysis: para. 723
- Baseline Information: para. 724
- Baseline Cumulative Impact Area Information: para 725
- Modeling: para 726
- Probable Hydrologic Consequences determination: para. 728
- Groundwater Monitoring Plan: para.731.210
- Surface-water Monitoring Plan: para. 731.220

Findings:

The Baseline hydrologic information used to establish the original mining application are applicable to the culvert and expansion. As such, the requirements of R645-301-723 through 726, 728, and 732.200 have been met.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Permit Area Boundary Maps

Plate 5-2--Mining Projections adequately shows the permit area boundary.

Findings:

The plan fulfills the requirements of this section.

OPERATION PLAN

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

The operation is located on U.S. Forest Service (USFS) land on Crandall Creek, which is a tributary of Huntington Creek. The canyon in which the operation is located is very narrow with steep sides. Access to the site is by way of a USFS road from Huntington Canyon. At the upper end of the site is a USFS turnaround, parking area, and trail head. Through a special use permit, USFS allows the permittee to use this area for employee parking and snow storage.

There are in this area 2 minable coal seams: the lower Hiawatha seam and the upper Blind Canyon seam. This mine is entirely in the Hiawatha seam, but the permittee will conduct exploratory drilling in the future to determine the feasibility of mining the Blind Canyon seam. The seam is accessed directly through an outcrop and old workings (page 5-5, 5-7).

The entire surface operation was initially located entirely on the north side of Crandall Creek. In 1996, the site underwent major modification. Crandall Creek was diverted into a 72-inch culvert over the entire length of the site and the stream channel was covered with filter blanket material. The stream channel and the bottom of the canyon were then filled with approximately 73,000 cubic yards of material to create a large working pad. The sediment pond was relocated and enlarged. The coal loading facilities were enlarged and relocated onto the new pad and a run-of-mine coal stockpile was created on the south side of Crandall Creek. A new bathhouse and office building was built up canyon from the coal loading facilities on the south side of Crandall Creek.

Type and Method of Mining Operations

Coal is mined by both room-and-pillar and longwall methods using a 3-entry system. Continuous mining machinery is, of course, used for entry and panel development and for second mining in those areas missed by the longwall machinery. Entries are 20 feet wide and are placed on 60-foot centers. Safety factors for rooms and main entries range, respectively, from 1.37 to 2.45 and from 1.39 to 4.37 (page 5-10).

From 1991 through 1995, annual coal production increased from 877,500 tons to 1,660,900 tons using only continuous mining machinery. From 1995 through 2000, annual production using room-and-pillar and longwall methods is expected to be 2,500,000 tons (page 5-11).

Facilities and Structures

The surface area is divided, roughly, into 3 areas: the pond and coal handling area, the office and shop area, and the portal area.

The pond and coal handling area is located at the lower end of the site. A 60-inch conveyor crosses the canyon from a transfer point just outside the belt portal to a run-of-mine coal stockpile on the south side of Crandall Creek. A 48-inch reclaim conveyor goes down canyon from the coal stockpile to a pair of crushers. From the crushers, a 48-inch feed conveyor goes to a 100-ton product bin which feeds 2 short 48-inch loading conveyors which in turn go to a pair of truck scales located adjacent to the 100-ton product bin. The sediment pond lies about 100 feet down canyon from the 100-ton product bin.

The office and shop area lies about 400 feet up canyon from the coal stockpile. It includes the bathhouse and office, the shop, the warehouse, the culinary water tank, the rock dust silo, the trash dumpsters, and the electrical substation.

The portal area lies across the canyon from and above the coal handling area. The slope below the portal area is covered with a layer of shotcrete. The portal area includes the portals, the fan housing, the fan transformer, a small office, and the belt transfer which coal is transferred from the run-of-mine belt to the 60-inch coal stockpile conveyor which crosses the canyon.

All of the preceding information about the surface facilities was gleaned from the permittee and from Plate 5-3--Surface Facility Map. The surface facilities description in the operation portion of the plan has not been updated to include the 1996 facilities expansion.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-521

The permittee must update the surface facilities description in the operation portion of the plan to include the changes made during the 1996 surface facilities expansion.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: R645-301-420

Analysis:

The plan contains a copy of Genwal's Air Quality Approval Order which includes air quality monitoring and fugitive dust control plans.

Findings:

This portion of the application is considered complete and accurate.

SUBSIDENCE CONTROL

Regulatory Reference: R645-301-332

Analysis:

The subsidence control plan is contained in Chapter 5. Potential damage from subsidence includes disruption of water flows; creating cracks that could affect grazing, wildlife and recreational uses; and tree falls and cliff failures that could affect nesting birds, particularly raptors.

The land is used for domestic grazing on gentle slopes and for wildlife habitat and recreation over the total acreage. The vegetative resources should not be negatively affected by subsidence, so the current land use is expected to continue. According to the application, the Forest Service says there is no marketable timber in the area of potential subsidence. If subsidence affects grazing, Genwal will compensate the appropriate party by paying the fair market value for the loss.

If subsidence monitoring detects an area that is actively subsiding, the area will be surveyed for tree nesting raptors and measures implemented to protect any nest sites from destruction during the nesting season.

Springs within the potential subsidence limit are a significant resource to the local wildlife and may be affected. If documentation concludes that mining efforts at the Crandall Canyon Mine have eliminated the flow from the seeps and springs, then acceptable remedial action plans will be submitted for approval and subsequently installed.

Any loss of flow is likely to be detrimental to wildlife. Wildlife resources expects mitigation when flows are reduced 50% or more.

Findings:

This portion of the application is complete and accurate.

FISH AND WILDLIFE RESOURCE PROTECTION

Regulatory Reference: R645-301-333

Analysis:

Potential impacts to fish and wildlife include elimination of 1200 feet of fisheries habitat during the mining operations, increased hunting pressure on big game, effects to small vertebrates, temporary loss of critical (riparian) and other wildlife habitat within the disturbed area, and possible disruption of water sources.

The application says the loss of 1200 feet of fisheries habitat will be mitigated with the recommendations from Wildlife Resources presented in Appendix 3-8. This appendix discusses some proposals for Genwal to fund fish barriers in the Huntington Creek drainage. The concept was later abandoned because of some problems. The only other projects discussed in Appendix 3-8 concern habitat enhancement during final reclamation. Therefore, Appendix 3-8 does not contain any mitigation proposals for the proposed project.

Crandall Creek is considered an important spawning area for fish from Huntington Creek, and all riparian habitat is considered critical wildlife habitat. Genwal also needs to find ways of mitigating for this temporary loss. They have been discussing various mitigation options with the Division, the Forest Service, and Wildlife Resources. These agencies appear to have agreed upon the best options, but the practicality of them is still uncertain. As the mitigation proposals are finalized, they need to be included in the application or mining and reclamation plan.

In Section 3.23.3, the application contains several methods that would be used during the construction phase to protect water quality in Crandall Creek, including more frequent water monitoring and the use of straw bales in areas adjacent to the stream. Genwal commits to develop and implement appropriate mitigation plans with the regulatory authority should stream flow diminish significantly or water quality deteriorate.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-333

Because Crandall Creek is an important spawning area for fish from Huntington Creek, and because the riparian habitat is considered of critical value for wildlife, Genwal needs to propose methods to mitigate for the loss of fish and riparian habitat caused by culverting a portion of Crandall Creek. Genwal needs to coordinate its plan with Wildlife Resources, the Division, the Forest Service, and possibly with the Army Corps of Engineers.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec.817.22; R645-301-232, -233, -234, -242, -243.

Analysis:

Section 2.31	General Requirements
2.31.1	Methods for Removal and Storage
2.31.2	Analysis of Topsoil Substitute
Section 2.34	Topsoil Storage
Plate 5-3	Crandall Canyon Mine Surface Facility Map

The Division is unable to asses the technical methods for topsoil removal and storage until adequate soil resource information is available. Therefore, the plan cannot be considered technically adequate with regard to a description of soil handling plans.

Soils will not be removed in the area of the stream bank. Here, a geotextile fabric will be laid over the soils to protect them *in situ*. It is not made clear in the narrative how surrounding terrain excavation, construction activities and placement of the culvert will proceed without disturbing the stream bed soils, however.

Genwal Resources Inc. plans to remove soil to a minimum depth of one foot. This soil will be segregated into topsoil and subsoil piles and stored on the upper storage pad. Physical dimensions of the salvage piles should be provided, including breadth, depth and length, to help assess the piles' volumes and exact placement on the upper storage pad. Location of the upper storage pad (Plate 5-3) is not identified on Plate 5-3 and/or other appropriate plates.

Soil survey and chemical analyses for topsoil and substitute topsoil have been completed for past salvage operations within the current disturbance areas. However, additional surveys and chemical analyses need to be performed for the proposed new disturbance areas on the salvageable north facing soils, subsoils and topsoil substitutes.

Soil salvage plans should be based on the soil's morphological profile and the technical

difficulties of recovery, not the amount required for a six-inch redistribution layer. An adequate soil survey is required before the soil salvage operation can begin and for proper determination and assessment of topsoil depth and recovery estimates. The survey will enable prediction of soil salvage volumes, which will enable determination of stockpile size, placement and location.

Findings:

The plan does not fulfill the requirements of this section. The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-232, R645-301-234

All topsoil will be removed as a separate layer from the area to be disturbed, and segregated and stockpiled. Evaluation of compliance with this regulation requires that the deficiency listed under **SOILS RESOURCE INFORMATION** be corrected. This deficiency is repeated here: *The application must include an organized, clear and concise description of the premining soils resource, including a map delineating the different soils, soil identification and description and present and potential productivity of existing soils. The Order-1 Soil Survey will meet the standards of the National Cooperative Soil Survey as incorporated by reference in R645-302-314.100.*

INTERIM STABILIZATION

Regulatory Reference: R645-301-331

Analysis:

When disturbance occurs, Genwal will ensure that the smallest area practicable will be disturbed. When an area is disturbed, revegetation measures will be implemented to establish and maintain the area and to minimize erosion.

All surface areas which are disturbed during construction and which will not be needed for mining operations will be revegetated in the fall of the year following completion of construction. The plan contains a seed mix to be used in these areas. Alfalfa would be added on steeper slopes to increase erosion protection.

Contemporaneously reclaimed areas within the disturbed area from which runoff reports to the sediment pond will achieve 80% cover on the slopes. Appendix 3-5 contains details of the irrigation plan to maintain 80% cover.

Findings:

This portion of the application is complete and accurate,

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Systems

There are 3 roads associated with this site: the Forest Development Road, the Forest Service Access Road, and the Portal Access Road. All 3 are classified as primary roads (page 5-31).

The Forest Development Road connects the site with the main road in Huntington Canyon. It was built by the U.S. Forest Service (USFS) and is thus outside the permit area. It is, however, maintained by the permittee as a primary road in accordance with a USFS road use permit. It will be retained as a permanent feature following final reclamation.

The Forest Service Access road goes from the entrance to the site to the turnaround area at the upper end of the site. It was built by USFS but was upgraded by the permittee to accommodate this operation. It is a primary road. It will be retained as a permanent feature following final reclamation. It is shown in plan view on Plate 5-3--Surface Facility Map. A profile and typical cross section of this road are shown on Plate 5-10--Road Profile and Cross Section.

The Portal Access Road connects the warehouse area with the portal area. It is a primary road. It will be completely reclaimed during final reclamation. It is shown in plan view on Plate 5-3--Surface Facility Map. A profile and typical cross section of this road are shown on Plate 5-10--Road Profile and Cross Section.

Other Transportation Facilities

Besides the roads, there are also 4 conveyors among the surface transportation facilities: a 60-inch run-of-mine conveyor, a 48-inch reclaim conveyor, and short 48-inch loading conveyors. All of these conveyors are shown on Plate 5-3--Surface Facility Map and discussed in Section 5.26. However, the discussion in Section 5.26 is obsolete since it describes the coal handling facilities as they were before the 1996 surface facilities expansion.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-521

The permittee must revise the transportation facilities description in the operation portion of the plan to include the changes made during the 1996 surface facilities expansion.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

The only excess spoil is sediment pond waste and no burned waste is disposed of at this site. The operation generates no coal mine waste, coal refuse, or coal processing waste (pages 5-32 through 5-34).

Sediment pond waste is either disposed of in underground workings or hauled to a permitted coal waste disposal facility (page 5-34). Noncoal waste (trash) is collected in dumpsters and hauled to a landfill by a contractor when necessary (page 5-33).

Findings:

The plan fulfills the requirements of this section.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

The original plan, dated 12/23/94 Revised 10/1/95, contains several sections that are

relevant to the proposed culvert and expansion. The plan sections in the following areas have been reviewed and determined to be unchanged from the original Technical Analysis and approval:

- Discharges into an Underground Mine: para. 731.510
- Gravity Discharges from Underground Mines: para. 731.520
- Water Quality Standards and Effluent Limitations: para. 751
- Siltation Structures: Other Treatment Facilities, 742.230
- Impoundments, 733, 743

Findings:

The Operation Plan hydrologic information used to establish the original mining application are applicable to the culvert and expansion. As such, the requirements of the above-listed paragraphs have been met.

R645-301-731.220, Surface-water Monitoring Plan

Analysis:

The surface-water monitoring plan approved before the culvert project proposal is described beginning on page 7-47. Although this is an approved plan, it does not include any revisions due to the culvert installation. The period of time the culvert is under construction is critical to *preventing* sediment contributions to Crandall Creek. The stream is a high value fisheries stream and sediment must be actively prevented from entering it. To react to events would run the risk of killing the fish downstream.

Some, although not all, specific surface-water monitoring activities that are needed to evaluate the plan include:

- Detailed descriptions of construction activities and associated actions and prohibited actions that will prevent sediment from entering the stream.
- Comparison of water samples upstream and downstream of the construction site to determine relative turbidity and suspended solids. This will reflect the impact of construction activities.
- An immediate action plan in terms of mitigation and of cessation of activities which caused any increase in turbidity and suspended solids.

An explanation of construction activities is provided on page 3-9 of the Biology section. Reference is made to an undefined "Appendix 3-_ " where more detailed plans are available. Reference is also made to the parameters to be tested after sampling on a daily basis. Given that Crandall Creek is a critical fisheries habitat, and given that the construction activities can (and routinely do) cause large sediment contributions in a momentary event, DOGM requires that the

turbidity be monitored on a continuous basis. Such a requirement is allowed under R645-301-731, "The Division may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented." The plan proposal of a maximum 10% allowable turbidity increase is reasonable.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-731.220

The current surface-water monitoring plan does not meet the requirements of R645-301-731.220. In particular, para. 731.221 which requires "The plan will provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in R645-301-731 as well as the effluent limitations found in R645-301-751." When preparing the plan, paragraphs 731 and 751 should be followed for specific requirements on earth-handling to meet these requirements. Additionally, R645-301-526.222 contains requirements relative to minimizing damage to fish and to minimizing suspended solids. These requirements should be included to the surface-water monitoring plan. The surface-water monitoring plan must include continuous monitoring of turbidity and detailed measures to prevent the construction from causing sediment in the stream.

R645-301-732.300, 742.300, Diversions: General

R645-301-742.330, Diversions: Miscellaneous Flows

R645-301-720, Environmental Description

Analysis:

Discussions of the runoff control facilities on the proposed expanded pad are presented on page 7-68. They make reference to Plate 7-5D, however there is no such plate. Calculations are referenced in the text to be in Appendix 7-7, but this appendix contains other information. Per telephone conversation with the Operator, Plate 7-5 and the Addendum to Appendix 7-4 was used for the Technical Analysis. However, other difficulties soon became evident. Plate 7-5 contains no designators for the three undisturbed watersheds and the three pad areas referenced in the text. Further, there was no way to correlate calculations for watershed A or to pad area A.

Similarly, culverts are described as being in certain locations, and they are not as described. In the Addition to Appendix 7-4 there are no Hydrograph Generation Program Output calculations

for pad area A. Therefore, it is not possible to evaluate the proposal. Plate 7-5 lists the contour interval as 2 ft. while the contour is actually 10 ft.

The text indicates that "due to the gentle slopes of the pad areas (approximately 2%), riprap will not be required in the drainage ditches." While this is true for most of the ditches, Drainage Ditch DD-14 has an average slope of nearly 32%. Similarly, a portion of DD-13, just downstream of C-11, has a 33% slope. As such they must have protection, such as riprap or be put into a culvert. On Plate 7-5 there is a section of land within the disturbed area uphill of the west half of DD-13 . This is a steep area of about 66% slope with no apparent purpose in the proposed expansion. It would appear more appropriate for the disturbed area boundary to follow the alignment of DD-13. On Plate 7-5 there is a V-shaped drainage area on the South side of the proposed pad extension which concentrates its flow into DD-13. This is a natural stream channel. As such, it is likely to wash out the ditch and carry runoff and sediment onto the disturbed area.

The Addendum to Appendix 7-4 used the 10yr-24hr storm to design the ditches for the undisturbed watersheds and operations pad areas. This is an appropriate design.

Findings:

The design methods used are appropriate and conform to R645-301-742.323.

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-720

The requirements of R645-301-720 have not been met. Particularly paragraph 722 which requires "... maps to adequately represent the existing land surface configuration of proposed disturbed areas ..... and the proposed permit area...".

R645-301-732.300, R645-301-742.300

The requirements of R645-301-732.300 and 742.300 have not been met. In particular, para 742.100 which requires, "Minimize erosion to the extent possible", "Diverting runoff away from disturbed areas.", and "Diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion."

R645-301-742.320, Diversions: Perennial and Intermittent Streams

Analysis:

The culvert capacity was calculated using the SCS, Type B method as presented in

Addendum to Appendix 7-7. The resulting 431cfs was confirmed by DOGM calculations. The 100 yr- 6 hr event was used which conforms to R645-301-742.323 requirements and to the DOGM position paper on the subject. It is noteworthy that this site has the fortunate situation where the inlet has an inherent safety factor. That is, the culvert inlet has a total of 18 ft. of vertical rise before spilling onto the operations pad. The result of that is the culvert can pass the design flow, 431 cfs, plus an additional 200 cfs.

Findings:

The requirements of R645-301-742.330 have been met. This portion of the plan is approved with Entrance Type B as shown in Addendum to Appendix 7-7. The Operator is cautioned to be certain the culvert inlet type used for design is the one installed in the field. As shown on the nomograph, other inlet types could substantially reduce culvert capacity.

The Division would recommend that a trashrack be installed upstream of the culvert inlet. Substantial quantities of trees and wood debris are present along the entire stream and they should be kept from entering the culvert.

R645-301-731.600, Stream Buffer Zones

R645-301-520, Operation Plan

Analysis:

The revised plan indicates buffer zones will be maintained above and below the culvert. See pg. 7-53. This is appropriate for regulatory compliance. However, there is a notable discrepancy between the underground buffer zones delineated on Plate 5-2 of the old plan (Rev. date 1/17/95, Rcvd date 6/23/95) and the revised Plate 5-2 (Rev. date 2/28/96, Rcvd date 5/8/96). The discrepancy is the old plate shows the underground stream buffer zone extending into Section 2, State Lease ML-21568, while the new plate shows the underground buffer zone stopping at the east line of Section 2. Such a change would result in the loss of approximately 2900 ft. of buffer zone, accompanied by no secondary mining, beneath Crandall Creek. Such a loss would have a severe negative impact on the stream due to subsidence.

This discrepancy may be an oversight in Plate preparation, and if so, should be corrected. If it is a proposed change in the MRP, it needs to be accompanied by complete justification of such action.

The subsidence plan, as described beginning on page 5-13, does not have any revisions due to the culvert project. Thus it is unclear whether the intent is to revise the underground mining as indicated on the revised Plate 5-2.

Page 7-53, Section 7.31.6 Stream Buffer Zones indicates, "For additional information concerning stream buffer zone protection see Chapter 3." No information could be found in Ch. 3 on buffer zones. The Operator is requested to provide any missing information.

Due to the inherent nature of the culvert project it will be necessary for the Division to specifically authorize operations closer than 100 ft. to, or through, a stream. This cannot be done until the information outlined in paragraph 731.600 has been completely and accurately presented.

Finding:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-731.600

The requirements of R645-301-731.600 have not been met. In particular, para. 731.611 "Coal mining and reclamation operations will not .... adversely affect the water quantity and quality or other environmental resources of the stream."

R645-301-520

The requirements of R645-301-520 have not been met. The requirement of para. 521.142 is that "maps and/or cross sections will clearly indicate ...the location and extent of areas in which...measures will be taken to prevent, control, or minimize subsidence and subsidence-related damage." Paragraph 525.100 requires "a subsidence control plan which will contain....a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence.... including, but not limited to: leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place."

R645-301-732, 742, Sediment Control Measures

R645-301-732.200, 742.200, Siltation Structures: Sedimentation Ponds

Analysis:

The piezometer installed in the side of the sedimentation pond described in the old plan is not mentioned as being part of the revised plan. Reference page 7-50 and compare old Plate 7-4 to new Plate 7-3. The revised pond still has the same elevation difference to the creek (about 32 ft.) and the canyon is not filled above the culvert outlet. Thus, the potential for subsidence still exists.

The revised plan indicates, "The eventual discharge from the emergency spillway will be to the energy dissipator at the downstream end of the Crandall Creek bypass culvert." An examination

of Plates 7-3, 7-5, 5-3, and other related plates, shows no such connection. This appears to be an error in the text or the plates.

The sediment pond has been enlarged and redesigned to accommodate the larger pad area with the culvert project. See pg. 7-57. The revised pond extends out on top of the new culvert and thus is above a perennial stream. The calculations used for the pond design include a 10-yr, 24-hr event for the pond and a 25-yr, 6-hr event for the spillway which are the correct regulatory designs. Reference R645-301-742.221.33 and .223. The concrete cutoff at the spillway inlet is an appropriate design.

Page 7-57 indicates Plate 7-3 contains watershed boundaries associated with the revised pond, while the revised plate 7-3 contains sediment pond details. Finally, there are numerous problems with Plate 7-5, Crandall Canyon Mine Drainage Map which are discussed under **R645-301-732.300, 742.300, Diversions: General. and R645-301-720, Environmental Description.**

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-742.221.37

The requirements of R645-301-742.221.37 have not been met. It will be necessary to continue the quarterly piezometer measurements and weekly visual monitoring under the new plan as has been done under the old plan.

R645-301-720

The requirements of R645-301-720 have not been met. The text and plates are not consistent with regard to the sedimentation pond emergency spillway discharge.

R645-301-732.200

The requirements of R645-301-732.200 have not been met. Although the basic design of the sedimentation pond is presented, the several significant inconsistencies between plates and text make it impossible to tell if it is done correctly and completely.

R645-301-742.240, Siltation Structures: Exemptions

Analysis:

Comments relative to this section have already been submitted to the Operator under the

Midterm Review of this mine. They should be consulted for appropriate action.

Findings:

See Midterm Review of this mine.

R645-301-744, Discharge Structures

Analysis:

The energy dissipator design provides for an exit velocity less than the natural stream velocity for the same event. This is a good design and should minimize sediment contributions as required.

The Addendum to Appendix 7-7, pg. 17, contains the notation "All gabion baskets to be attached to adjacent baskets with hog rings or other appropriate wire fasteners. " Hog rings are inadequate for the energy dissipator to perform under the design conditions. The gabions would be dislodged and washed out if held together with such tenuous fasteners. Further, gabion manufacturers have requirements for much more substantial fastening between adjacent gabions. Usually these involve spiral lacing of minimum gage wires. The Operator should consult the Hilfiker Art Weld Gabions Construction Guide, Beckart Gabion Installation Guide, and other gabion manufacturer instructions.

The sediment pond primary and emergency spillways outlet system has been redesigned to handle the extended pad area and additional undisturbed areas. The required 25-year, 6-hour event was used in the design.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-744

The requirements of R645-301-744 have not been met. The discharge from the culvert into the energy dissipator, as the plan describes, will not perform to "reduce erosion to prevent deepening or enlargement of stream channels...".

R645-301-742.312

The requirements of R645-301-742.312 have also not been met. "The diversion and its appurtenant structures will be designed, located, constructed maintained, and used

to: Be stable." The attachment of gabions to each other are is not adequate as presented in the plan.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The electrical substation is the only support facility at this site. It is located on the facilities pad near the warehouse and adjacent to the rock dust bin. It is shown in plan view on Plate 5-3--Surface Facility Map and in more detail on Plate 5-8--Electrical Substation Installation.

Findings:

The plan fulfills the requirements of this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The required signs and markers are put in place and maintained at this site. They include mine and permit identification signs, perimeter markers, buffer zone markers, and topsoil markers.

Findings:

The plan fulfills the requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

All blasting will be done in accordance with R645-301-524. All blasting will be done under the direction of a person trained, examined and certified as required by 30 CFR 850 and all other applicable regulations of the Utah Industrial Commission. As required by R645-301-524.700, blasting records will be kept at the site or at the mine office in Huntington, Utah for at least 3

years.

In accordance with R645-301-524.520, signals which are audible for at least one half mile will be given before and after blasting. Access to the blast area will be restricted. The operator will post blasting signs, in accordance with R645-301-524.510, in the vicinity of the blasting operations to indicate that blasting is taking place and explain the meaning of the audible signals.

The maximum weight of explosive detonated within any 8-millisecond period will be determined by the equation of R645-301-524.651. Blasting will be done only between sunrise and sunset unless otherwise approved by the Division as provided in R645-301-524.420. Flyrock will be prevented from leaving the permit area and will not be cast more than one half the distance to the nearest occupied building within the permit area (pages 5-12 and 5-13).

Findings:

The plan fulfills the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

The boundary of the actual disturbed area is shown adequately on Plate 5-3--Surface Facility Map. The boundary of the permit area--or affected area--is shown adequately on Plate 5-2--Mining Projections.

These plates were prepared by or under the supervision of and certified in March of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Mining Facilities Maps

The mining facilities are shown adequately on Plate 5-3--Surface Facility Map.

These plates were prepared by or under the supervision of and certified in March of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Mine Workings Maps

Mine workings are shown on Plate 5-2--Mining Projections. Also shown on Plate 5-2 are the permit area boundary, the various lease boundaries, section lines, and areas of proposed development, as well as the locations of the portals and surface facilities.

These plates were prepared by or under the supervision of and certified in March of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Monitoring and Sample Location Maps

Plate 5-2--Mining Projections shows the locations of both exploratory drill holes and those holes that were drilled for the purpose of water monitoring. This plate was prepared by or under the supervision of and certified in March of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Plate 2-1--Soil Types Study Map shows those locations where soil samples were taken for the characterization and delineation of the prevailing soil pedons. This plate was prepared by or under the supervision of and certified by Richard B. White, a professional engineer registered in the state of Utah.

Plate 5-5 shows the locations of subsidence monitoring stations and control points. This plate was prepared by or under the supervision of and certified in January of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Plate 7-12--Seep and Spring Locations shows the locations of seep and spring monitoring points. Plate 7-16--Stream Monitoring Stations shows the locations of stream monitoring points. These plates were prepared by or under the supervision of and certified by Richard B. White, a professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

RECLAMATION PLAN

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

POSTMINING LAND USE

Regulatory Reference: R645-301-412

Analysis:

The areas where surface disturbance resulted from mining operations will be restored to its premining usefulness as rangeland, wildlife habitat, and recreational use. No alternative land uses are proposed.

R645-301-412.200 requires that the application include a copy of comments concerning the proposed postmining land use from the legal or equitable owners of the surface of the permit area and Utah and local government agencies which would have to initiate, implement, approve, or authorize the use of the land following reclamation. The citations from the Manti-LaSal National Forest Land and Resource Management Plan can be considered as comments from the Forest Service for most of the disturbed area. The plan states that the road will be left in place pursuant to the wishes of the Forest Service, the surface landowner. Appendix 1-2 contains correspondence from the Forest Service stating that the improved roadway is to be retained beyond the proposed life of the mine but that some reclamation will be required.

The portion of the disturbed area not managed by the Forest Service is owned by Genwal. The only other land owner within the permit area is the State of Utah, and this land will not be affected by surface operations.

Findings:

This portion of the application is considered complete and accurate.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The plan and its accompanying cover letter are equivocal regarding the restoration of the site to approximate original contour. Page 2 of the cover letter, dated January 17, 1996, says that it is the permittee's intention "to return the Crandall Canyon Mine disturbed area to its approximate original contour and the area reseeded [sic]." Similarly, page 5-47 of the plan says that "backfilling and grading of disturbed lands has been designed to restore all disturbed areas affected by surface operations to the approximate original contour of the land." Furthermore, the contours of Plate 5-16--Reclamation (Phase I) and the cross sections of Plates 5-17A--Reclamation Cross Sections and 5-17B--Reclamation Cross Sections represent the reclaimed surface as being restored to approximate original contour with the cut slopes completely eliminated. Page 5-44 of the plan, however, says that the disturbed area will only be "restored to a contour that is compatible with natural surroundings." And page 5-47 is similarly ambiguous where it says that "backfilling and grading will proceed so as to eliminate *or reduce* the cut slope (italics added)."

R645-301-553.100 requires that disturbed areas be backfilled and graded to achieve the approximate original contour and eliminate all highwalls and depressions. The plan must be revised so that it is consistent and unambiguous in its commitment to restore the site to its approximate original contour and eliminate the cut slopes and highwalls.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-553.100

The permittee must eliminate from the plan all inconsistencies and ambiguities regarding the restoration of the site to its approximate original contour. The plan must show that the site will be restored to its approximate original contour and that all highwalls and cut slopes will be completely eliminated.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

After the completion of underground mining operations, the entire site will be regraded and backfilled. As mentioned under **APPROXIMATE ORIGINAL CONTOUR RESTORATION** above, the plan is equivocal as to whether or not the site will be restored to its approximate original contour and must be corrected to indicate that it will.

Backfill material will be laid down in 12-inch to 18-inch lifts and compacted by repeated passes of machinery. In areas with slopes less than 30%, the compacted fill material will be ripped to a depth of 18 inches and disced prior to topsoil placement. In areas with slopes greater than 30%, the compacted fill material will be ripped to a depth of 18 inches (page 5-47).

Topsoil or substitute topsoil material will be distributed over the prepared area to a depth of 6 inches. The nominal disturbed area is 10.14 acres. However, 0.48 acres of this total is undisturbed, the 3 topsoil stockpiles cover 0.9 acres, the USFS road, which will not be reclaimed, covers 1.2 acres, and the stream channel and stream banks, which will be covered with a filter blanket material, constitute 1.1 acres. This makes for an actual disturbed area of only 6.46 acres, which will require 6300 cubic yards of topsoil material. 3701 cubic yards of this will come from the topsoil stockpiles, while the rest will be substitute topsoil material from the backfill material which has been determined suitable for that purpose (page 2-8).

No terracing will be done. All backfilling and grading will be done on the contour.

Prior to the backfilling of the cut slope areas, all shotcrete, rock bolts, and wire mesh will be removed. These areas will then be backfilled. Again, the plan is equivocal as to whether the cut slopes will be eliminated or merely reduced; it must be corrected to indicate that they will be eliminated (page 5-47).

The backfilling and grading plan is woefully inadequate. It does not provide a comprehensive narrative of the backfilling and grading process. It does not describe the removal of the sand bedding beneath the bypass culvert or the removal of the filter blanket between the fill and the original stream channel. There is no mass balance table to establish the cut and fill volumes or the topsoil volumes as they are found at the various cross section stations across the site. The disposition of the 78,546 cubic yards of fill material which will be hauled in for the construction of the facilities pad is not demonstrated. And there is no analysis of the final slopes to demonstrate that they achieve the stability factor of at least 1.3 which is required by R645-301-553.130.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-553, R645-301-553.130

The permittee must include in the plan an adequate backfilling and grading plan. This plan must include a comprehensive narrative of the backfilling and grading process. It must include a mass balance table to establish the distribution of cut and fill and topsoil volumes across the site and must demonstrate the disposition of the 78,546 cubic yards of fill material which will be hauled in for the construction of the facilities pad. It must also include a stability analysis of the final slopes to demonstrate that they will achieve a stability safety factor of at least 1.3.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

During final reclamation, the portals will be sealed and backfilled. The seals will consist of double rows of concrete blocks which will be put in place as far from the surface as is necessary to obtain competent top, sides and bottom. The area from the block seal to the surface will then be backfilled with spoil material which will be graded and blended into the reclaimed surface. A drain will be placed in the westernmost portal seal to prevent any accumulation of water behind the seal (pages 5-46 and 5-47).

R645-301-631 requires that the plan include a description of the methods used to backfill and seal all boreholes before they are abandoned. Page 7-70 states only that the boreholes will be plugged and abandoned at final reclamation, but does not give any further details.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-631, R645-301-748

The permittee must include in the plan a complete description of the methods used to backfill and seal all boreholes to the surface.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -233, -234, -242, -243.

Analysis:

Section 2.42 .....Soil Redistribution
Section 2.44 .....Soil Stabilization
Section 2.43 .....Soil Nutrients and Amendments

The reclamation plan cannot be considered technically adequate for redistribution of soils, use of soil nutrients and amendments and stabilization of soils.

Presently, the mine has 3,701 yd^3 stored in three stockpiles. Salvage of 6,300 yd^3 is planned. A total of 10,000 yd^3 will thus be stored on the site. A six-inch topsoil replacement depth is planned for the site. Although volume calculations are presented in section 2.42, there is confusion and appears to be a conflict with the calculations. Clarification is needed to help distinguish between current and proposed disturbed acres and available topsoil resources for reclamation.

Since Genwal is now making a concerted effort to maximize disturbance by expansion of the Crandall Canyon Mine surface facility area, they will be making a significant impact on the watershed, wildlife, soils, and vegetation. Therefore, a concerted effort should be made to maximize topsoil recovery to provide a greater volume of topsoil available during reclamation. Soil Salvage plans should be based upon the soil profile and not the amount required for a six-inch layer redistribution. Crandall Canyon Mine site has been operating with a deficiency of stockpiled topsoil, hence the description of substitute materials in the plan. This expansion provides an opportune time to recover large amounts of topsoil to replace the topsoil lost in previous salvage operations. Genwal Resources Inc. could take this opportunity to improve the reclamation plan so that more than six inches of topsoil can be replaced over portions of the site. Thus, pockets of deep mollisol-like soils could be created which would provide islands of lush vegetation.

Conventional topsoil replacement techniques will be used except where the slopes are too steep. Here other methods will be used as described in section 5.40 (not included with the submittal). Slopes considered too steep were not identified. It is mentioned on page 2-5 that after erosion occurs, mulch will be applied to the reclaimed slope. The Division requests that mulching (e.g., erosion control blanket) occur prior to the occurrence of erosion, as a means of avoiding erosion of the redistributed topsoil.

Stream channel reclamation and soil restoration need to be thoroughly discussed in the Reclamation Plan. The section needs to discuss reclamation methods for removing the surface expansion fill, buried culvert, supporting sand layer, and geotextile fabric. In addition, pedogenesis

of the buried soils will have been severely restricted. Physical-chemical changes most likely to occur include nutrient loss, loss of micro-biological life forms, existence of anaerobic conditions, loss of organic matter and humic acid, and structural breakdown of the soils. As a result, buried stream channel soils will be sterile, void of organic matter and humic supporting structure. Therefore, final soil reclamation efforts must include restoration of the soil's living and structural integrity using microbial inoculation, organic matter additions, and soil surface stabilization (e.g., grass sodding, erosion control blanket, etc.).

Findings:

The plan does not fulfill the requirements of this section. The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-242, R645-301-243, R645-301-244

More detail in the plan regarding the soil salvage (as requested in deficiencies listed under Operations Topsoil and Subsoil) is required. The Division shall not approve the 6" cover over the entire reclamation site since during reclamation, pockets of deep mollisol-like soils could be created which would provide islands of lush vegetation. Slopes where soils will not be salvaged should be identified. Acreages to be reclaimed should be reviewed for accuracy. Stabilization practices should include mulching and stabilization efforts immediately after topsoiling. Stream channel reclamation and soil restoration methods need to be identified for soil redistribution, amendments, and stabilization.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

There are 3 roads at this site: the Forest Development Road, the Forest Service Access Road, and the Portal Access Road. All 3 are classified as primary roads (page 5-31).

The Forest Development Road connects the site with the main state road in Huntington Canyon. It was built by the U.S. Forest Service (USFS) and is thus outside the permit area. It is, however, maintained by the permittee as a primary road in accordance with the USFS road use permit found in Appendix 1-1. It will be retained as a permanent road following final reclamation, in accordance with the terms of the road use permit.

The Forest Service Access road goes from the entrance to the site to the turnaround area at

the upper end of the site. It was built by USFS but was upgraded by the permittee to accomodate this operation. It is a primary road. It will be retained as a permanent road following final reclamation, in accordance with the USFS road use permit found in Appendix 1-1.

The Portal Access Road connects the warehouse area with the portal area. It is a primary road. It will be completely reclaimed during final reclamation.

The final configuration of the roads is shown in plan view on Plate 5-17--Reclamation (Phase I). Plates 5-17A--Reclamation Cross Sections and 5-17B--Reclamation Cross Sections show cross sections of the final configuration of the roads

Findings:

The plan fulfills the requirements of this section.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

The following paragraphs have been reviewed and compared to the Reclamation section starting on pg. 7-72. The plan does not mention these paragraph topics and therefore they all are not conforming to their respective paragraphs.

R645-301-731.510, Discharges Into an Underground Mine

R645-301-731.520, Gravity Discharges From an Underground Mine

R645-301-731.751, Water-quality Standards and Effluent Limitations

R645-301-731.600, Stream Buffer Zones

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-731.510, R645-301-731.520, R645-301-751, R645-301-731.600

The plan must be made to address the requirements of these regulations.

R645-301-732.300, 742-300, Diversions: General

Analysis:

The Final Reclamation plan outlined on pages 7-72 to 7-74 and shown on Plates 5-16 and 5-17 describes the Applicants methods to reclaim Crandall Canyon. Plate 5-16 is designated Reclamation (Phase I) and Plate 5-17 (Phase II). However, there are not any corresponding Phase I & II descriptions in the narrative. While the reclamation of the sedimentation pond is covered, there is no indication as to the timing of its removal.

There are several aspects of the canyon which make a detailed and comprehensive reclamation plan essential. These include the high value of the stream as a fisheries habitat, and steep canyon sides (66% to 83%) with the attendant difficulties in reclaiming such slopes. The old and unrevised plan is rather general in nature. It is therefore difficult to establish the actual nature and scope of the reclamation plan, and there is no mention of the culvert expansion. With the culvert project being a major revision to the plan, a substantial revision to the reclamation aspects is also necessary. One example is the statement that "Backfilling and grading will be done according to the original timetable as originally submitted." Finally, the last paragraph on pg. 7-74 is confusing as to intent and meaning.

The Applicant has sent three letters to DOGM which describe the expansion and they contain some reclamation descriptions. They are dated January 17,1996, March 14, 1996, and March 27, 1996. These letters are correspondence and, as such, are not actually part of the Mining and Reclamation Plan. The reclamation portions of the letters are rather abbreviated, being only two paragraphs long. Finally, the Applicant and DOGM have discussed several methods to achieve successful reclamation and none of them are currently in the plan.

In its present form the Final Reclamation plan is incomplete. Some, although not all, specific reclamation-related activities needed to evaluate the plan include:

- Construction aspects during the culvert expansion project to accomodate future reclamation,
- Specific objectives and construction sequencing during the reclamation phase,
- Specific objectives and methods to control sediment in the stream during reclamation construction,
- Stream diversion methods, if used during reclamation,
- Objectives and methods for accomplishing restoration of the stream channel and

steep side slopes,

Given that Crandall Creek is a critical fisheries habitat, and given that the construction activities can (and routinely do) cause large sediment contributions in a momentary event, DOGM requires that the turbidity be monitored on a continuous basis during reclamation construction activities. Such a requirement is allowed under R645-301-731, "The Division may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented." The plan proposal of a maximum 10% allowable turbidity increase is reasonable.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-742.313

The plan does not meet the requirements of R645-301-742.313. Specifically, " A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion will be designed and constructed so as to restore or approximate the premining characteristics of the original stream channel including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat."

Also see R645-301-740, especially 742.120, for further requirements on reclamation of sedimentation ponds.

R645-301-763, Siltation Structures

Analysis:

The plan does not describe the sequence and methods of handling sediment runoff during the critical period when the vegetation is being reestablished. One possible scenario is to return the site to its approximate pre-culvert configuration, retaining the smaller sedimentation pond to collect water from the site north of the road. Other plans could be devised, but the point is that vegetation be established before complete removal of the pond.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-763

The plan does not meet the requirements of R645-301-763. There is no description to explain how the "siltation structures will be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated".

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Surface areas which were disturbed during construction and which were not needed for mining operations were revegetated in the fall of the year following construction. Disturbed areas which contribute directly to the sediment pond were also contemporaneously revegetated in order to minimize erosion. Plate 5-17--Reclamation (Phase II) shows both the final reclamation and those areas which were contemporaneously reclaimed during the time of normal mining operations as well.

Findings:

The plan fulfills the requirements of this section.

REVEGETATION

Regulatory Reference: R645-301-340

Analysis:

Revegetation Plan

Seeding will commence as soon as the seedbed is finished in the late fall. Tree planting will be done in conjunction with seeding or in the following spring as soon as the soil is workable.

The plan contains one seed mix which is to be used for the entire area. It also includes a planting mix for areas near Crandall Creek. The seed list contains three introduced species. They are all highly desirable and should not be overly competitive with or displace native species in the area. Small burnet and yellow sweet clover are fairly short-lived species that will probably not be present after the ten-year extended responsibility period.

The Division of Wildlife Resources has requested that conifers be taken out of the planting mixture because conifers are encroaching in the area and replacing deciduous trees where many species of neotropical migrant birds nest. Even if conifers are removed from the planting mixture, they will become established naturally. However, keeping with Wildlife Resources' request, Genwal should remove blue spruce, Douglas fir, and Ponderosa pine from the planting mixture. In place of these, the number of cottonwoods and aspens to be planted in the riparian area needs to be increased.

The most common trees and shrubs in the riparian area according to recent baseline data are willows, Wood's rose, and red osier dogwood. The planting mix in Appendix 3-6 indicates willows would be planted at the rate of 110 per acre within 20 feet of the creek. Although this rate was adequate for when Genwal had not disturbed any areas very close to the creek, the rate of transplants now needs to be increased for the riparian area. Willows, roses, and dogwoods should be planted at least every foot along most of the stream but particularly in more critical areas. They should probably not be planted more than one or two feet away from the creek since they need to have water in order to root. Bioengineering techniques may be needed to establish shrubby riparian vegetation. Narrowleaf cottonwood would also need to be planted near the stream but not as densely as the willow and dogwoods. Other species included in the current planting mix can be used in more upland areas.

Wildlife Resources requested that certain species be added to the seed mix. These species are "Ranger" alfalfa, showy goldeneye, sweet anise, Porter ligusticum, western yarrow, mountain big sage, Wasatch penstemon, and Rocky Mountain penstemon. Some of these species may not be commercially available in the quantities needed for reclamation, and others may not be adapted or native to the area. Genwal needs to examine its seed mix in light of Wildlife Resources' comments. Species that should definitely be added are Rocky Mountain Penstemon, yarrow, and mountain big sage.

Many mine operators develop separate seed/planting mixtures for riparian areas. The current seed mix is acceptable for the riparian area, but it would be better to add a few species, such as redtop, Kentucky bluegrass, and yarrow, at rates of one, one-half, and one-half pounds of pure live seed per acre, respectively.

In Section 3.41.21, the application references a 6.65 acre disturbed area. This is probably a relic of the plan before the current application, but it needs to be corrected.

Areas with slopes less than 30% will be drill seeded at half the rate shown in Appendix 3-6. All areas, including those that were drill seeded, will be hydroseeded.

The plan formerly contained commitments to leave the soil surface in a roughened condition. Page 3-22 of the plan submitted May 22, 1992, states that the area would be thoroughly scarified leaving as many depressions as possible. It described contour trenching with furrows about 12 to 18

inches deep. Also, it stated that large rocks, dead trees, and brush would be strewn around the site. These are very desirable commitments, and it is highly recommended that they be restored to the plan. Placing rocks, dead trees, and brush around the site would be considered wildlife habitat enhancement.

The entire area of disturbance will be hydromulched with a long fiber wood mulch. Appropriate tackifying agents will be added to the hydromulch. The application shows tackifier application rates for varying slopes.

No irrigation is anticipated. Genwal commits to avoid using persistent pesticides and to prevent personnel-caused fires.

A contingency irrigation plan is recommended for transplants. Dry conditions could necessitate watering transplants for the first one or two summers.

Musk thistle is a very serious problem at mid- to high elevations in Utah. Although this noxious weed is not widespread in Huntington Canyon, it has been found at Genwal. Disturbed and newly seeded areas are very prone to noxious weed invasion. Genwal should plan now for noxious weed control during reclamation as it will almost certainly be necessary.

On January 1, 1994, the Forest Service issued a closure order for any straw or hay that is not certified to be free of noxious weeds. This includes transportation across Forest Service lands. Genwal is not planning to use straw or hay mulch in reclamation, but any straw or hay bales that are used for sediment control will need to be certified.

Revegetation Success Standards

A vegetation reference area has been established in the mountain shrub/grassland community above the mine portals for comparison with all areas for final bond release.

For areas to be compared with the reference area, the standard for woody species density has been set at 1336 shrubs per acre. This is based on reference area data. The standard for spruce/fir/aspen areas is 550 trees per acre as per Forest Service recommendations. This standard may need to be changed depending on the results of vegetation sampling.

The standard of 1336 shrubs per acre should be used for mountain shrub/grassland communities in the disturbed area. A separate standard needs to be established for riparian areas. However, the application does not contain woody plant density data on which to base a standard. When the Division receives this information, a standard will be set after consultation with the Division of Wildlife Resources.

The application also includes diversity standards for the different plant communities that existed prior to disturbance. The standards are minimum and maximum relative cover values for grasses, shrubs, and broadleaf forbs in the three major disturbed vegetation types in the disturbed area. In addition, the application states that no one species will make up more than 60% of the cover in its respective vegetation class except that individual species of shrubs and trees will make up no more than 80% of the density for this class. The application gives a monitoring schedule and methodologies for checking success of revegetation.

The diversity standards are apparently based on Natural Resource Conservation Service range site potential plant community data. They allow some flexibility but would ensure a reasonably diverse plant community.

R645-301-353.140 requires that the vegetative cover be capable of stabilizing the soil surface from erosion. Genwal needs to propose a method of demonstrating that this requirement has been met. Even if vegetative cover is equal to that of the reference area, the reclaimed area may not be stable. It is recommended that the Operator contact the Division for some possible methods.

R645-301-356.250 says that for areas previously disturbed by mining that were not reclaimed and that are remined or redisturbed, at a minimum, the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion. The vegetative ground cover existing before redisturbance was 50.3%. Relatively little of this cover was from plants that would be considered weeds. This figure needs to be established as the vegetative cover standard for success for the areas previously disturbed by mining.

As discussed under "Vegetation Resource Information," Genwal needs to propose a standard for measuring revegetation success in spruce/fir/aspen areas. A reference area could be established, or it might be possible to use the baseline information method depending on minimum sample size requirements compared to how many samples have been taken. The application would also need to contain baseline productivity information.

Genwal proposes to use the baseline method for judging revegetation success in riparian areas, but the application does not contain adequate information for this. Again, the application would need to show the minimum sample size criteria were met. Also, the application needs to have baseline productivity information.

Field trials to demonstrate reclamation feasibility are not currently anticipated to be necessary. However, if at some time in the future substitute topsoil materials are proposed to be used for reclamation and if these materials are available to use in a field trial, it may be necessary to establish test plots.

Wildlife Habitat

High value habitats (pinyon-juniper, agricultural and riparian areas) will be restored; in many cases, they will be enhanced beyond their premining condition. The goals are to create a diversified cover and/or habitat that will support a wide range of species while restoring to a premining condition and, where feasible, enhancing habitat.

On September 21, 1993, representatives from Genwal, the Division, and Wildlife Resources met on-site to discuss wildlife habitat enhancement for reclamation. Subsequently, Wildlife Resources wrote Genwal a letter with enhancement suggestions. This letter has been incorporated in the plan, and Genwal commits to use the recommendations. They include making several rock piles and placing modified utility poles with attached nesting boxes near the perimeter of the disturbed area. These measures were felt by Wildlife Resources to be the most practical means of enhancing wildlife habitat in this area. Combined with the revegetation plan, these methods can be considered the best technology currently available.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-341.210

Genwal needs to modify its seeding/planting mixtures. Conifers should be eliminated from the transplant mixture. The number of willows and other woody plants to be planted along the stream needs to be increased. Dogwoods and Wood's roses should be included in the planting mixture. The Division and Wildlife Resources recommend that certain species be added to the seed mixture, particularly for the riparian area. These species include, Kentucky bluegrass, Rocky Mountain penstemon, redtop, yarrow, and mountain big sage.

R645-301-121.100

In Section 3.41.21, the application references a 6.65 acre disturbed area. This is probably a relic of the plan before the current application, but it needs to be corrected.

R645-301-341.250

After the Division receives woody plant density information for the riparian area, the Division of Wildlife Resources will be consulted to determine a woody plant density success standard. This standard will need to be included in the application.

R645-301-341.250

The application needs to include a method for demonstrating that the vegetative cover is capable of stabilizing the soil surface from erosion.

R645-301-341.250

The vegetative cover standard for success for areas previously disturbed by mining that were redisturbed needs to be established in the application as 50.3%.

R645-301-341.250

Genwal needs to propose a standard for measuring revegetation success in spruce/fir/aspen areas.

R645-301-341.250

The application does not contain adequate information to use the baseline information method for judging revegetation success in riparian areas as proposed in the application. The application would need to show the minimum sample size criteria were met, and it would need to have baseline productivity information.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

If operations are to temporarily cease for 30 days or more, the permittee will submit to the Division a notice of intention to cease or abandon operations. This notice will include a description of the extent and nature of surface and underground disturbance prior to temporary cessation. It will also describe the reclamation which will have been accomplished, any ongoing monitoring, water treatment, and temporary closure of mine openings and securing of mine facilities (page 5-41).

Findings:

The plan fulfills the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate 5-2--Mining Projections adequately shows the permit area boundary. Plates 5-16--Reclamation (Phase I) and 5-17--Reclamation (Phase II) show both the permit area boundary and the disturbed area boundary as they are related to all proposed final reclamation work. Plates 5-17A--Reclamation Cross Sections (Phase I) and 5-17B--Reclamation Cross Sections (Phase I) show the disturbed area boundary as it relates to the proposed reclamation backfilling and grading.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Bonded Area Map

Plate 5-2--Mining Projections adequately shows the permit area boundary. Plates 5-16--Reclamation (Phase I) and 5-17--Reclamation (Phase II) show the permit area boundary as it is related to the proposed final reclamation work. Plates 5-17A--Reclamation Cross Sections (Phase I) and 5-17B--Reclamation Cross Sections (Phase I) show only the disturbed area boundary as it relates to the proposed reclamation backfilling and grading. The reclamation plan anticipates no incremental reclamation or bonding. The entire site will be reclaimed in a single step and only the sediment pond will be left to be reclaimed at a later time.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Reclamation Backfilling and Grading Maps

Plates 5-16--Reclamation (Phase I) and 5-17--Reclamation (Phase II) show, in plan view, the details of backfilling and grading operations during reclamation. Plates 5-17A--Reclamation Cross Sections (Phase I) and 5-17B--Reclamation Cross Sections (Phase I) show the same details in cross section. The locations of these cross sections are shown on Plates 5-16 and 5-17. With the exception of the reclamation of the sediment pond, all reclamation earthwork will be done during Phase I of final reclamation. The pond will be reclaimed at a later time, when it is no longer necessary for sediment control, and this small amount of earthwork will constitute Phase II of final reclamation.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall,

a professional engineer registered in the state of Utah.

Reclamation Facilities Maps

The only facilities which will remain after the completion of underground mining operations will be the Forest Service road and the sediment pond. The Forest Service road will be a permanent feature. The sediment pond will be reclaimed during Phase II of final reclamation, when it is no longer needed for sediment control.

The permanent Forest Service road is shown on Plates 5-16--Reclamation (Phase I) and 5-17--Reclamation (Phase II). The sediment pond is shown on Plate 5-16 and the final, reclaimed configuration of the pond area is shown on Plate 5-17.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Final Surface Configuration Maps

The final surface configuration after the completion of all earthwork, including the reclamation of the sediment pond, is shown on Plate 5-17--Reclamation (Phase II).

This plate was prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Reclamation Monitoring and Sampling Location Maps

Plate 5-5 shows the locations of subsidence monitoring stations and control points. This plate was prepared by or under the supervision of and certified in January of 1996 by R. Jay Marshall, a professional engineer registered in the state of Utah.

Plate 7-12--Seep and Spring Locations shows the locations of seep and spring monitoring points. Plate 7-16--Stream Monitoring Stations shows the locations of stream monitoring points. These plates were prepared by or under the supervision of and certified by Richard B. White, a professional engineer registered in the state of Utah.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Reclamation Surface and Subsurface Manmade Features Maps

As mentioned under **RECLAMATION FACILITIES** above, only the Forest Service road and the sediment pond will remain after the completion of mining operations. The Forest Service

road will be a permanent feature. The sediment pond will be reclaimed during Phase II of final reclamation, when it is no longer needed for sediment control. No other public roads, buildings, pipelines, electrical transmission lines, or other features will remain on this site after final reclamation.

The permanent Forest Service road is shown on Plates 5-16--Reclamation (Phase I) and 5-17--Reclamation (Phase II). The sediment pond is shown on Plate 5-16 and the final, reclaimed configuration of the pond area is shown on Plate 5-17.

These plates were prepared by or under the supervision of and certified by R. Jay Marshall, a professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of Bond Amount

The reclamation cost estimate is internally inconsistent, incomplete, and impossible to follow or verify. The following are just some of its deficiencies.

1) The cost of sealing the portals is not included.

2) The cost of backfilling and sealing the boreholes is not included.

3) The reclamation cost summary on page 5-46 has not been updated to include the reclamation costs associated with the 1996 surface facilities expansion.

4) Appendix 5-20 does not include the original pre-1996 reclamation cost calculations. It must contain the original calculations since they are part of the overall, updated cost estimate.

5) On page 2 of Appendix 5-20, the demolition cost for Item (9), Scale Pads and Supports, is missing. This cost has not been included in the total of $121,809.80 on page 4 of Appendix 5-20.

6) Page 9 of Appendix 5-20, which is headed TOTAL BOND COSTS-CALCULATED AND ADJUSTED is a mess. The figures aren't totaled consistently, there are discrepancies, and the escalation is done with the wrong factors and is done incorrectly as well.

The correct escalation factors, taken from Means© are:

1992	2.21%
1993	2.61%
1994	3.21%
1995	1.93%
1996 (and beyond)	2.58% (average of the previous 3 years)

7) The cost of reclaiming the pond is not included. The pond is not even shown in the cross sections of Plate 5-17B (Section 13+00 runs through the pond).

8) As mentioned under **BACKFILLING AND GRADING** above, there is no documentation of the volume of 78,546 cubic yards upon which the excavation and haulage cost estimate is based.

9) No maximum volume is specified for the run-of-mine coal pile and its removal cost is not included.

Findings:

The plan does not fulfill the requirements of this section. The applicant must provide the following, prior to approval, in accordance with the requirements of:

R645-301-542.800

The permittee must correct the many problems in the reclamation cost estimate so that it is complete, consistent, and verifiable.

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
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801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

July 1, 1996

Randy Gainer, Environmental Manager
Genwal Resources, Inc.
P. O. Box 1420
Huntington, Utah 84528

Re: Mid-Term Review Response, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #3, Emery County, Utah

Dear Mr. Gainer:

The Division received your response to the mid-term review of the Crandall Canyon Mine Plan on March 13, 1996. Your response is determined to be acceptable and the mid-term review is considered to be completed. However, it is important that you remember the commitments you have made to provide additional information in conjunction with the culvert expansion project which is currently going through the permitting process. In the event the expansion revision is not approved you are still responsible for submitting modifications which address ASCA's, minimum in stream flows, and the references in Chapter 7.

Thank you for your help during the review process. Please call if you have any questions.

Sincerely,

Daron R. Haddock
Permit Supervisor

Enclosure
cc: P. Grubaugh-Littig
M. Suflita
S. Demczak
endmid.GEN

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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June 11, 1996

Randy Gainer, Environmental Manager
Genwal Resources, Inc.
P. O. Box 1420
Huntington, Utah 84528

Re: Determination of Administrative Completeness, Proposal to Culvert Crandall Creek, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #3, Emery County, Utah

Dear Mr. Gainer:

The Division has completed a review of the additional information you submitted dated May 28, 1996, which amended the Crandall Creek Culvert Application Package. With this additional information your application is now considered to be administratively complete.

A technical review of your plan has been initiated. Technical deficiencies will be forwarded to you as individual reviews are completed. The Division will also coordinate with other agencies and incorporate their comments into our review process. Issues raised will need to be resolved prior to permit issuance.

At this time you should publish a Notice of Complete Application for the Crandall Creek Culvert Project as required by R645-300-121. A copy of the publication should be sent to the Division as soon as it is available. You should also insure that a copy of the application is on file at the Emery County Courthouse. The Division will complete a technical analysis which must find that your application is technically complete. We anticipate that additional information may be necessary to make your application technically complete and look forward to working with you throughout the permitting process.

Please call if you have any questions.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

cc: P. Baker
P. Grubaugh-Littig
M. Suflita
J. Kelley
R. Davidson

ACRCOV.GEN

Form DOGM - C1 (Last Revised 6/93) File Folder # 3

APPLICATION FOR PERMIT CHANGE 905

Title of Change: Updated listing of officers & Directors

Permit Number: ACT/015/032

Mine: Crandall Canyon

Permittee: General Resources Inc.

Description, include reason for change and timing required to implement: Change in Corporate officers & directors

☐ Yes	☒ No	1. Change in the size of the Permit Area? _____ acres ☐ increase ☐ decrease.
☐ Yes	☒ No	2. Change in the size of the Disturbed Area? _____ acres ☐ increase ☐ decrease.
☐ Yes	☒ No	3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
☐ Yes	☒ No	4. Will permit change include operations in hydrologic basins other than currently approved?
☐ Yes	☒ No	5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes	☒ No	6. Does permit change require or include public notice publication?
☐ Yes	☒ No	7. Permit change as a result of a Violation? Violation #
☐ Yes	☒ No	8. Permit change as a result of a Division Order? D.O.#
☐ Yes	☒ No	9. Permit change as a result of other laws or regulations? Explain:
☐ Yes	☒ No	10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
☐ Yes	☒ No	11. Does the permit change affect the surface landowner or change the post mining land use?
☐ Yes	☒ No	12. Does permit change require or include collection and reporting of any baseline information?
☐ Yes	☒ No	13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes	☒ No	14. Does permit change require or include soil removal, storage or placement?
☐ Yes	☒ No	15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
☐ Yes	☒ No	16. Does permit change require or include construction, modification, or removal of surface facilities?
☐ Yes	☒ No	17. Does permit change require or include water monitoring, sediment or drainage control measures?
☐ Yes	☒ No	18. Does permit change require or include certified designs, maps, or calculations?
☐ Yes	☒ No	19. Does permit change require or include underground design or mine sequence and timing?
☐ Yes	☒ No	20. Does permit change require or include subsidence control or monitoring?
☐ Yes	☒ No	21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
☐ Yes	☒ No	22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
☐ Yes	☒ No	23. Is this permit change coal exploration activity ☐ inside ☐ outside of the permit area?

☐ **Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.**

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Signed - Name - Position - Date

Subscribed and sworn to before me this 5th day of June, 1996

Notary Public

My Commission Expires: , 19

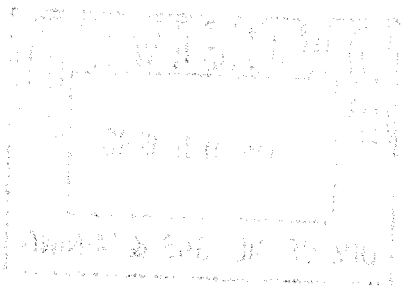
Attest: STATE OF) ss:

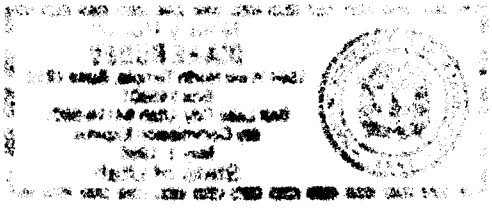
COUNTY OF

Notary Public DIANE RUBEY 5/96
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
My Commission Expires
May 1, 1998
State of Utah

RECEIVED
Received by Oil, Gas & Mining
JUN 05 1996
DIV. OF OIL, GAS & MINING

ASSIGNED PERMIT CHANGE NUMBER





Application for Permit Change
Detailed Schedule of Changes to the Permit

Title of Change: Update listing of officers & directors in MRP

Permit Number: ACT/015/032

Mine: Crandall Canyon

Permittee: General Resources Inc

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit change. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise the exiting mining and reclamation plan. **Include page, section and drawing numbers as part of the description.**

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	Pages 1-3 & 1-5
☐ ADD	☒ REPLACE	☐ REMOVE	Appendix 1-9
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
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Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
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Executive Director
James W. Carter
Division Director

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801-538-5319 (TDD)

May 10, 1996

Randy Gainer, Environmental Manager
Genwal Resources, Inc.
P. O. Box 1420
Huntington, Utah 84528

Re: Administrative Completeness Review, Proposal to Culvert Crandall Creek, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #3, Emery County, Utah

Dear Mr. Gainer:

The Division has completed an initial review of the Crandall Creek Culvert Application Package. The purpose of this review is to determine the Administrative Completeness of your application. There are a few areas of deficiency in the plan that prevent us from determining it administratively complete at this time. These deal primarily with collecting adequate baseline vegetation information, providing a wildlife protection and mitigation plan, and obtaining approvals for the relocation of the road. The enclosed memo describes the deficiencies in more detail. Please review it carefully to make sure you understand the concerns. Once these items have been adequately addressed your plan could be considered administratively complete. We encourage you to work closely with Paul Baker to ensure a complete and adequate response. You should submit this information as quickly as possible.

In the meantime, the Division is proceeding with a technical review of the rest of your plan. We will try to keep you informed of any issues that arise during that review. The complete technical analysis cannot be done until the application is determined to be administratively complete.

Please call if you have any questions.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

Enclosure
cc: P. Baker
P. Grubaugh-Littig
M. Suflita
J. Kelley
R. Davidson
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Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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May 9, 1996

TO: File

THROUGH: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist

Re: Administrative Completeness Review, Proposal to Culvert Crandall Creek, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #2, Emery County, Utah

SUMMARY

In submittals received October 5, 1995, and January 18, March 15, and March 21, 1996, Genwal is proposing to expand its surface facilities and put about 1200 feet of Crandall Creek in a culvert. The disturbed area would be expanded to about 10.0 acres.. All of the expansion would be on private land surrounded by Forest Service land.

The Division of Wildlife Resources is very concerned about the proposal and feels mitigation is essential. Crandall Canyon has one of the best-developed riparian areas in the Huntington Canyon drainage, and it provides spawning habitat needed for fish in Huntington Creek.

This memorandum discusses those items that need to be present for the Division to make a determination of administrative completeness. A March 5, 1996, memorandum discusses the technical adequacy of the submittal. A revised technical memorandum is forthcoming.

ANALYSIS

UNSUITABILITY CLAIMS

Regulatory Reference: UCA R645-301-115

Analysis:

Operations are being conducted within 100 feet of a public road, and the application contains a copy of the Forest Service special use permit for the road. However, according to Plate 5-3, the Forest Service road would be relocated. Accordingly, Genwal needs to show approval from the Forest Service to relocate the road including short-term closure if that is necessary. Also, the Division needs to provide an opportunity for public comment as required in R645-103-234.

Findings and Requirements:

Before the Division makes a determination of administrative completeness, Genwal needs to show it has approval from the Forest Service to relocate the road through the disturbed area. Also, the Division needs to provide an opportunity for public comment as required in R645-301-234.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-321

Analysis:

The area proposed to be disturbed by the culvert installation is primarily in riparian and spruce/fir/aspen communities. The plan and the application do not propose a separate revegetation success standard for spruce/fir/aspen areas, but the Division requires a separate standard for each community when the area to be disturbed within that community is greater than one acre. More than one acre of spruce/fir/aspen would be disturbed with the culvert installation proposal.

The current plan contains some data about the spruce/fir/aspen community, but the information is inadequate to use it as a "baseline information" revegetation success standard. Another alternative would be to establish a reference area in a spruce/fir/aspen area. The vegetation information needed for the application is either 1) Complete baseline vegetative cover information, *including overstory*, or 2) Reference area vegetation information that can be compared with the baseline information in the plan.

Neither the current plan nor the application contains woody plant density information for the riparian area. This information is needed both to design a revegetation plan and to develop revegetation success standards.

R645-301-321.200 requires the application to contain productivity information. In the

addendum to Appendix 3-2, the application says productivity measurements were not made but that the SCS will be contacted at a later date to determine this value. The application needs to contain productivity information for the areas proposed to be disturbed.

Findings and Requirements:

Before the Division determines the application administratively complete, the applicant needs to submit the following information:

1. Most of the proposed disturbed area is in a spruce/fir/aspen community. The application does not include adequate baseline vegetation information for a revegetation success standard for this community. Options include establishing and sampling a reference area and providing adequate baseline information.

2. The application needs to contain woody plant density information for the riparian area.

3. The application needs to contain vegetation productivity information for the areas proposed to be disturbed.

FISH AND WILDLIFE RESOURCE PROTECTION

Regulatory Reference: R645-301-333

Analysis:

The application says the loss of 1200 feet of fisheries habitat will be mitigated with the recommendations from Wildlife Resources presented in Appendix 3-8. This appendix discusses some proposals for Genwal to fund fish barriers in the Huntington Creek drainage. The concept was abandoned. The only other projects discussed in Appendix 3-8 concern habitat enhancement during final reclamation. Therefore, Appendix 3-8 does not contain any mitigation proposals for the proposed project.

Crandall Creek is considered an important spawning area for fish from Huntington Creek. Wildlife Resources has indicated informally they have ideas about how to mitigate the loss of spawning habitat caused by the proposed culvert installation. Genwal should discuss Wildlife Resources' ideas with appropriate regulatory agencies, including the Division, and determine what methods will constitute the best technology currently available as required in R645-301-333 and R645-301-358.

Wildlife Resources commented that mitigation requirements need to be jointly agreed upon by Genwal and Wildlife Resources. The Division and the Forest Service should also agree upon the plan, and these methods should be included in the application.. The Wildlife Resources comment letter says the mitigation must compensate for lost spawning ground; fishery, riparian, big game, beaver, and passerine bird habitats; and recreational opportunities.

It is understood the applicant is working with the Division, Wildlife Resources, and the Forest Service to develop a mitigation plan. However, before the Division can determine the application administratively complete, the application needs to include at least some basic information about what mitigation would be done.

Findings and Requirements:

Before the Division can determine the application administratively complete, the applicant needs to propose methods to mitigate for the loss of fish and riparian habitat caused by culverting a portion of Crandall Creek. Genwal needs to coordinate its plan with Wildlife Resources and with the Division.

RECOMMENDATIONS

Genwal's application to expand its surface facilities should not be determined administratively complete. Some required baseline vegetation information, is not in the application. Also, the application does not contain a wildlife protection plan specific to replacing spawning habitat that would be temporarily lost as a result of the proposed project.

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
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February 21, 1996

Randolph Gainer, Environmental Manager
Genwal Resources, Inc.
P. O. Box 1420
Huntington, Utah 84528

Re: Midterm Review, Genwal Resources, Inc., Crandall Canyon Mine, ACT/015/032, Folder #3, Emery County, Utah

Dear Mr. Gainer:

The Division has completed the Midterm review of the Crandall Canyon Mine. The results of the Midterm are contained in the enclosed review document. Please examine it carefully, paying particular attention to the requirement sections. Genwal must complete the requirements in order to close out the midterm review. A response will need to be provided by no later than March 22, 1996.

Please call if you have any questions regarding the Midterm review or the requirements.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

Enclosure
cc: J. Smith
W. Western
P. Grubaugh-Littig
S. Johnson
MTCOVER.GEN

SUMMARY

By letter dated November 27, 1995, Genwal was informed that the Division was conducting a Midterm Review of the Crandall Canyon Mine. Elements of the review were to consist of the following items:

a. Review of the Plan to ensure that the requirements of all permit conditions, Division Orders, notice of violation (NOV) abatement plans, and permittee-initiated mining and reclamation plans (MRP) changes approved subsequently to permit approval or renewal, are appropriately incorporated into the Plan document.

b. Ensuring that the MRP has been updated to reflect changes in the Utah Coal Regulatory Program which have occurred subsequently to permit approval or renewal.

c. Review of applicable portions of the permit to ensure that the MRP contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area.

d. Evaluating the reclamation bond to ensure that coverage adequately addresses permit changes approved subsequently to permit approval or renewal, and to ensure that the bond amount is appropriately escalated in current-year dollars.

The following technical analysis provides the findings of that review. When the plan is determined to be deficient in a particular area, there may be specific requirements which the permittee will need to complete in order to closeout the Midterm review.

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

Type and Method of Mining Operations

The Longwall Mining Amendment (95-C) for the Crandall Canyon Mine was submitted to Division of Oil, Gas and Mining ('DOGM') on January 24, 1995 and approved May 19, 1995.

The United States Forest Service ('USFS') does not concur with Genwal's proposal to longwall mine under Crandall Creek, at least until Burnout Creek study is completed in approximately two years. USFS stipulations to the Bureau of Land Management ('BLM') leases do not allow subsidence of perennial streams. Crandall Creek was identified as perennial when the Environmental Impact Study ('EIS') was done for the Federal leases but it is not clear whether or not a new EIS would be needed if other factors indicate that full extraction mining could be done under this stream without causing damage.

On January 10, 1996 Randy Gainer of Genwal and Dale Harber of USFS discussed the two remaining USFS concerns: the 20 degree angle of draw and subsidence monitoring to show that perennial sections of Crandall Creek are not subsided. These concerns appear to have been resolved satisfactorily based on the angle of draw determination in Appendices 5-2, 5-3, and 5-4 of the approved Mining and Reclamation Plan ('MRP') and the annual subsidence monitoring.

On August 31, 1995 Genwal was to have completed a plan for minimum stream flow to satisfy USFS concerns regarding dewatering of Crandall Creek. The concern was over water pumped from the stream for use in mine operations rather than loses due to subsidence. The MRP was considered complete at the time the longwall amendment was approved based on the commitment to provide the information. On August 20, 1995, Genwal sent a letter to DOGM stating: 1) that the minimum flows in Crandall Creek (non-freezing conditions) measured at the lower flume were 0.23 cfs and 0.33 cfs in September 1992. Genwal was pumping 135 gpm (0.3 cfs) for 2 to 3 hours each workday during this period; and, 2) a commitment to take no more than half the flow and to pump at lower rates during periods of minimum flow (75 gpm or 0.17 cfs). The letter was not formatted for insertion into the MRP. It is not known if the USFS received a copy of the letter and if the information and commitment in the letter satisfy their requirement.

Findings:

The stipulations to the approval of Amendment 95C have been satisfied. However, because of concerns of the USFS that the entire length of Crandall Creek requires protection as a perennial stream and the concerns of Utah State Trust Lands that coal recovery be maximized beneath the State leases, Genwal has submitted several modifications to the longwall mining plan that are still being analyzed by DOGM, USFS, and State Lands.

The letter concerning minimum measured flow and the commitment to leave at least half the flow during low flow conditions was not formatted for insertion into the MRP.

It is not known if the USFS received a copy of the letter concerning minimum

measured flow and the commitment to leave at least one half the minimum flow, and if the information and commitment in the letter satisfy the USFS requirement.

Requirements:

1) Genwal must clarify whether or not the information in the August 20, 1995 letter to Dave Darby, concerning minimum measured flow and the commitment to leave at least one half the minimum flow:

   a) has been given to the USFS.
   b) whether or not the information and commitment are satisfactory to the USFS.

2) Genwal must present the information in the August 20, 1995 letter to Dave Darby (concerning minimum measured flow and the commitment to leave at least one half the minimum flow) in a format to be included in the MRP.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.26, 817.95; R645-301-252.400 and 420.

Analysis:

The operator's previous Air Quality Permit, issued in 1992, was based on removal of 1.5 million tons of coal per year. With the installation of the longwall system, production in 1995 was 2.08 million tons. In 1995 Genwal applied for an Air Quality Permit for production of up to 2.5 million tons. This permit was issued in December, 1995 and a copy will be included in the 1995 Annual Report. Estimated production by the year 2000 is 3 to 3.5 million tons and Genwal plans to apply for a new permit when needed.

Findings:

The Operator has adequately addressed the requirement of R645-301-252.400 and 420 except for the following:

Requirement:

1) The MRP needs to be updated to include the 1995 Air Quality Permit.

COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

Analysis:

The Longwall Mining Amendment (95-C) for the Crandall Canyon Mine was submitted to DOGM on January 24, 1995 and approved May 19, 1995. State Trust Lands had expressed concerns about maximum recovery of coal beneath stream buffer zones and outside longwall panels and wanted first mining by room-and-pillar to be required in those areas. Previous versions of the MRP contained a commitment for uphole drilling one-half mile spacings in the mains of Section 2, to a maximum of 150 feet, to evaluate overlying coal seams for mineability. That commitment to uphole drilling was not included in the Longwall Amendment, but it was restored to page 5-7 the MRP in subsequent submittals. The new page 5-7, along with new pages 5-8 through 5-19 were incorporated into the MRP on May 17, 1995.

USFS does not concur with Genwal's proposal to longwall mine under Crandall Creek, at least until Burnout Creek study is completed in approximately two years. USFS stipulations to the BLM leases do not allow subsidence of perennial streams. Crandall Creek was identified as perennial when the EIS was done for the Federal leases, but it is not clear whether or not the USFS or BLM would need a new EIS if other factors indicate that full extraction mining could be done under this stream without causing damage.

Findings:

The stipulations to the approval of Amendment 95C have been satisfied. However, because of concerns of the USFS that the entire length of Crandall Creek requires protection as a perennial stream and the concerns of Utah State Trust Lands that coal recovery be maximized beneath the State leases, Genwal has submitted several modifications to the longwall mining plan that are still being analyzed by DOGM, USFS, and State Lands.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

USFS does not concur with Genwal's proposal to longwall mine under Crandall Creek, at least until Burnout Creek study is completed in approximately two years. USFS

stipulations to the BLM leases do not allow subsidence of perennial streams. Crandall Creek was identified as perennial when the EIS was done for the Federal leases but it is not clear whether or not the USFS or BLM would a new EIS would be needed if other factors indicate that full extraction mining could be done under this stream without causing damage.

On January 10, 1996 Randy GAINER of Genwal and Dale HARBER of USFS discussed the two remaining USFS concerns: the 20 degree angle of draw and subsidence monitoring to show that perennial sections of Crandall Creek are not subsided. These concerns appear to have been resolved satisfactorily based on the angle of draw determination in Appendices 5-2, 5-3, and 5-4 of the approved MRP and the annual subsidence monitoring .

Findings:

The stipulations to the approval of Amendment 95C have been satisfied. However, because of concerns of the USFS that the entire length of Crandall Creek requires protection as a perennial stream and the concerns of Utah State Trust Lands that coal recovery be maximized beneath the State leases, Genwal has submitted several modifications to the longwall mining plan that are still being analyzed by DOGM, USFS, and State Lands.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Groundwater Monitoring

A new Chapter 3 and an addition to Appendix 3-2 were submitted on February 15, 1995 in response to stipulations to the approval of the LBA Amendment. Additional changes, which concern monitoring seeps and springs for changes in flow and conducting macroinvertebrate studies, were added to pages 3-8, 3-9, 3-17, 3-18, 3-35, 3-36, and 3-37 were submitted on April 11, 1995.

Surface-Water Monitoring

Jill Dufour, a fisheries biologist with the USFS, determined that Crandall Creek is perennial up to the Forest Service boundary, although it still is not clear how much farther

upstream it is perennial. Randy Gainer and Dale Harber accompanied Jill for this field work in late August or early September, 1995. The definitions of perennial used by the USFS, DOGM, and other agencies may never be entirely compatible and those differences will continue to create problems in the coal mine permitting process.

On August 31, 1995 Genwal was to have completed a plan for minimum stream flow to satisfy USFS concerns regarding dewatering of Crandall Creek. The concern was over water pumped from the stream for use in mine operations rather than loses due to subsidence. The MRP was considered complete at the time the longwall amendment was approved based on the commitment to provide the information. On August 20 Genwal sent a letter to DOGM stating: 1) that the minimum flows in Crandall Creek (non-freezing conditions) measured at the lower flume were 0.23 cfs and 0.33 cfs in September 1992. Genwal was pumping 135 gpm (0.3 cfs) for 2 to 3 hours each workday during this period; and, 2) a commitment to take no more than half the flow and to pump at lower rates during periods of minimum flow (75 gpm or 0.17 cfs). The letter was not formatted for insertion into the MRP. It is not known if the USFS received a copy of the letter and if the information and commitment in the letter satisfy their requirement.

Stream Buffer Zones

USFS does not concur with Genwal's proposal to longwall mine under Crandall Creek, at least until Burnout Creek study is completed in approximately two years. USFS stipulations to the BLM leases do not allow subsidence of perennial streams. Crandall Creek was identified as perennial when the EIS was done for the Federal leases but it is not clear whether or not the USFS or BLM would a new EIS would be needed if other factors indicate that full extraction mining could be done under this stream without causing damage.

Sediment Control Measures

All areas draining to the sediment pond are properly designed under the BTCA to treat runoff. Areas that do not report to the sediment pond are designed using BTCA, however, they are misidentified as small area exemptions ('SAE's'). According to Technical Directive Tech-003A small area exemptions are areas that are demonstrated to meet effluent limits without treatment by sediment ponds or alternate sediment control measures ('ASCA's'). By definition in the same directive these areas are treated by alternate sediment control measures and should be call alternate sediment control areas.

Siltation Structures: Exemptions

There are eight areas listed in the MRP as SAE's. However, none of these areas have been demonstrated to meet applicable water quality standards or effluent limits without

treatments by alternate sediment control methods. Therefore, these areas should be removed from the exemptions section.

Findings:

The changes in Chapter 3 concerning monitoring of seeps and springs for changes in flow and conducting macroinvertebrate studies need to be incorporated into the appropriate sections of chapter 7.

The stipulations to the approval of Amendment 95C have been satisfied. However, because of concerns of the USFS that the entire length of Crandall Creek requires protection as a perennial stream and the concerns of Utah State Trust Lands that coal recovery be maximized beneath the State leases, Genwal has submitted several modifications to the longwall mining plan that are still being analyzed by DOGM, USFS, and State Lands.

The letter concerning minimum measured flow and the commitment to leave at least half the flow during low flow conditions was not formatted for insertion into the MRP.

It is not known if the USFS received a copy of the letter concerning minimum measured flow and the commitment to leave at least one half the minimum flow, and if the information and commitment in the letter satisfy the USFS requirement.

Genwal has misclassified eight (8) areas as SAE's. These areas must be reclassified as ASCA according to Tech-003A.

Requirements:

1) Genwal must incorporate the changes concerning monitoring of seeps and springs for changes in flow and conducting macroinvertebrate studies (from the revised chapter 3) into the appropriate sections of chapter 7.

2) Genwal must clarify whether or not the information in the August 20, 1995 letter from Genwal to Dave Darby, concerning minimum measured flow and the commitment to leave at least one half the minimum flow, has been given to the USFS and if the USFS has made any indication whether or not the information and commitment are satisfactory.

3) Genwal must present the information in the August 20, 1995 letter to Dave DARBY (concerning minimum measured flow and the commitment to leave at least one half the minimum flow) in a format to be included in the MRP.

4) Genwal must reclassify all areas not reporting to the sediment pond. These

areas should be listed as alternate sediment control areas.

BONDING REQUIREMENTS

As part of the midterm review of the Crandall Canyon Mine, the Division reviewed the bond amount. The Division has determined that bond amount should be $701,000 in 1999 dollars. Currently the bond amount is $703,000 in 1999 dollars. Since the difference between the two amounts is only 0.3%, no bond adjustment is needed.

Findings:

The current bond in the amount of $703,000 is adequate. Genwal has met the bonding requirements at this time.